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ORIGINAL ARTICLES.

A CONSIDERATION OF FOUR CASES OF EPILEPSY WITH REFERENCE TO CAUSE.

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It sometimes happens that a consideration of much worn subjects is profitable, and I therefore ask your indulgence for a few minutes to a subject, which is as old as any, in medicine, and which has profited as little as any, by the experience of past centuries. Undoubtedly the cause of this tardy progress is due in large measure to the multiplicity of irritations, which directly or indirectly produce the cortical explosions. Barring traumatic causes of direct influence, the study of peripheral sources of irritation is most interesting and fraught with the most lasting results. It is to this side of the study that the cases, selected out of a large general practice, are intended to be added.

Case 1 is that of a little boy nine months old, who had his first epileptic seizures when but three months of age. The parents of this child are free from all influencing hereditary diseases; are not of neurotic temperament, and have neither of them ever manifested any tendency to epilepsy. Child cut two lower incisors at three months of age. Had no enlargement of head or abnormal curving of bones of spine or extremities. Has no organic disease of kidneys or liver. Was born under my care without instruments and being the sixth child, labor was easy. Child has never received any injury to head. Bones of skull do not overlap, nor are they in any way malformed. Child has never had any of the exanthemata, or other serious diseases, other than the one under consideration. So far as can be determined it has not inherited syphilis or tuberculous tissue. No intestinal worms were passed either before medication or afterward. It weighed about ten and one-half pounds at birth and increased its weight to eighteen pounds at the end of three months. Since this time diet has been limited and child now weighs about twenty-two pounds. It had never taken drugs of any kind until day of first fit, and had not been sick, in the belief of parents. Mother is a large, healthy woman, who had successfully nursed through babyhood four other healthy boys. Milk upon examination was found normal after child had first fit. Child was allowed during holidays to eat largely of candy and crackers for three or four days. At the end of this time the first seizure came on about seven o'clock in the morning, after a restless night. When called I supposed I had one of the numerous phases of convulsion so often noted in children. As I did not see this attack, was only permitted a description of it, which was to the effect, that child turned its head to right side, while in mother's arms, and began jerking the arms, then the head, and finally the whole body. Eyes were partially open, and eyeballs rolled upward with irregular motion.

At time of visit which was about one-half hour after seizure was over, which they said lasted about ten minutes, I found child still unconscious. Pulse 120. Temperature normal, skin moist. Pupil of eyes dilated, with balls turned upward. I advised a brisk cathartic of citrate of magnesia, and returned the same evening to learn the child had gained consciousness in about one hour, was restless under influence of previous experience, and cathartic. Bowels had moved three times and stools contained large quantities of fermented milk and pieces of undigested crackers. Child had still no fever or other evidence of organic disease aside from symptoms detailed. During the day following child developed a condition of larynx which excited both curiosity and fear. Often, but not always, when the child would undertake to drink or cry, the larynx would be thrown into a tonic contraction which would last one-half minute and be accompanied by the most violent efforts at inspiration, the face becoming livid and very anxious until relaxation came on rather slowly and relieved. No loss of consciousness seemed to accompany these movements, yet within the same day child would often, some ten or twelve times, fix its eyes upon some object, or stare into space, without parents being able, for a short time, to attract its attention. These two evidences of petit mal have continued with more or less frequency for the past four months, while but four attacks of the heavier type have occurred, and these have been on two occasions accompanied by errors in diet by indulgence of parents. Am thoroughly convinced that the cortical explosions are induced by the toxic influence of fermenting food in the alimentary canal. It would seem to be the general effect, yet not being able to obtain urine from so young a child, it can not be definitely affirmed, that some end products might not have had also their normal lines of cleavage disturbed, with consequent leucomaine poisoning. Limiting the diet, opening the bowels, and promoting good digestion have still further argued, by much improvement in the direction of this conclusion.

Case 2.—Boy 6 years old. Had his first epileptic seizure when seven months of age. As I did not see him until he was 4 years of age, I have been compelled to content myself with the history as given to me by the child's mother. These attacks as described by her were probably epilepsy, and occurred every month or oftener, at irregular intervals, and although constantly under a physician's care, grew worse both as to interval and severity of attack. When first seen in a convulsion three years ago the following memoranda were made: Face pallid, pupils dilated and turned upward, skin covered with profuse perspiration. No fever. Face was turned to right side, and muscles of arms in tonic contraction, thumbs being drawn into palmar surface tightly. Foamed at mouth and had bitten tongue slightly. Seizure lasted about thirty minutes, when it was succeeded by an interval of one hour of profound unconsciousness, after which he slowly regained a knowledge of his surroundings.

Father in this case has within the last four years, developed locomotor-ataxia. Is still able to attend to business. Mother at time of birth of this child had three uremic convulsions, and child was hastily delivered with forceps. No other hereditary tendencies have been transmitted to this child so far as can be learned from ancestors; child is very irritable and stammers in speech. Has never had any injury to

head, even including forceps delivery. He is about normal as to weight, active but impulsive. Eats heartily, and occasionally voraciously. Has no evidence of rickets. Has never had any of the exanthemata. Kidneys produce a normal quantity of urine, with urea and uric acic in proper proportion. The uric acid group, including xanthin and paraxanthin, was normal even following severe attacks. Fits occurred most often at night but occasionally during the day. Child had quite often during the day very unique pharyngeal contractions which were accompanied by a fixed gaze and a loss of consciousness. Radical errors in diet were often committed because of over-indulgent parents, and these errors were always marked by increased major and minor seizures. Conversely, the strict adherence to a limited diet of milk, without bromides, caused a very much longer interval, so much so that with aids to digestion there is hope that child may entirely recover from attacks.

Case 3 is that of a girl 17 years of age. Had first fit at age of 13, when she had three or four per day for an interval of four weeks. Menstruation had been established at 12 years of age. Mother healthy and no hereditary tendencies. Father now has paralysis agitans but otherwise family history is good. Girl is well developed. Weight about 110 pounds, height 5 feet, 4 inches. Has two healthy sisters, but no brothers. She has never had any serious sickness. Has had no injury to head. Can find nothing abnormal about uterus or clitoris. Has no habit of masturbation so far as careful watching can detect. In fact her history is negative except from causes that have their origin in the alimentary canal. Patient presented a model picture of gastric atony brought about in her case no doubt by prolonged habit of overloading the stomach. Physical examination and use of stomach tube disclosed a very greatly dilated stomach with consequently lowered powers of digestion, fermentation and retarded digestion being the inevitable result. This result was not mitigated even in bowels as particles of fermenting food were often passed in quantity per rectum. This was the condition at the time of first seizure. By the use of lavage twice per week and limiting the diet to one-half pint of milk every three hours for six weeks, the epileptic manifestations subsided. With but one exception this condition of passiveness continued for three years. In the meantime patient was gradually allowed a more extended diet, and after a time relapsed into old habits, when the seizures returned with renewed vigor. Most of them come on in the night, but several times she has fallen in the day time. Generally bites her tongue, and usually cries out upon the beginning of the attack. The same conditions exist as were found in the first instance, as regards stomach troubles.

I believe the source of irritation is also sharply defined in this case, and hope can be expressed in her case in my judgment. This last invasion has existed now about five months, with fewer attacks all the time. At first of period three or four attacks occurred daily while now only one a week. One curious fact which I think worthy of mention in this case was observed, and that was that when bromid of sodium was given it so disturbed the stomach that attacks were increased; at the same time she had aphasia, stammered, and could scarcely express her thoughts. This was after the use of forty-five grains per day for eight days. When drug was discontinued symptoms cleared away again. This was repeated three times with the same results, so that I feel confident of the observation.

Examination of urine in this case showed slightly diminished quantity of urea for twenty-four hours but no other abnormal products. Uric acid normal, paraxanthin only a trace, for four litres of water.

Case 4.—Young man 27 years of age. Family history good, on side of both parents. Has never been sick except during childhood. Has never received any severe injury. Was well born but has neurotic temperament. Has no organic disease of kidneys, liver, spleen, heart or lungs. Mentally quite bright and has no defects of special senses. Urine shows no abnormal products in large quantities. Ten years ago while in school had first fit. After this had most of seizures at night about one or two months apart. About five years ago they had attained an average of one every two weeks. Has no petit mal, but says he can feel the approach of the attacks some time before they come on, by a peculiar nausea and hot sensation in epigastric region. This patient for six years had been under treatment of very competent specialists without relief. Bromid of sodium, and in fact all the bromids had been tried without limiting disease more than a short time.

A careful study of this patient four years ago, revealed the following facts, other than those before mentioned. Was very tender in region of epigastrium. Had dull, with occasional sharp pains in left side, augmented about one hour and a half to two hours after eating. Had a voracious appetite for food rich in carbohydrates, ate rapidly and failed to masticate his food properly, and went at once into active physical labor. A test meal, after one and one-half hours revealed a plus quantity of HCl, showing abundant remnants of the carbohydrates with absence of albumen and muscular fibers as revealed by the microscope. This condition was most marked at night, and it was at night that he had the epileptic seizures. I therefore, omitted all bromid salts, and recommended lavage before bed time—about two and one-half hours after evening meal. Used four drams of bicarbonate of soda to quart of hot water. Restricted diet to conform to these facts, using magnesia once a day to evacuate bowels. On this plan patient went five months without an attack. Interval of seizure has grown longer steadily, until it has reached nine months, and it is to be hoped that interval will increase indefinitely.

It will be observed that these cases represent great variety as to age. They include three boys and one girl, but they all have something in common, some form of irritation originating in the alimentary canal, causing, according to the best of belief, a cortical disturbance which in turn produces unconsciousness directly and reflex tonic and clonic spasm of peripheral muscular fibers. This analogy has been sought from a number of cases under observation, because of the stronger proof that such cases are to have upon the more extended knowledge of peripheral irritants in epilepsy, a fact which neither therapia nor many bright minds in the profession, are wont very rapidly to appreciate. Whether we believe in the causative influence of uric acid, or leucomain products from this group, or whether confidence is given to the total toxic effects of maldigestion, the fact still remains that a very strong relation exists between these products, and those cortical disturbances seen in the various forms, of so-called idiopathic epilepsy. Other sources of extrinsic irritation are numerous and have received due credit in most instances long since, while this more obscure field, and therefore all the more interesting one, still presents much for careful study, in the differentiation of such irritants. If the rationale of this phase of the disease is, therefore, that irritants from the digestive tract, through the blood, come in contact with the cortex, thereby evolving a constant or intermittent efferent current in like manner controlling the muscles, it would seem the highest service to such patients must come in the prevention of these products from entering the blood current. Under this view it is difficult to understand how the bromid salts can do more than palliate and thereby perpetuate an evil which is quite removed from the drugged cortex. Indeed, I shall venture the opinion, that in many of these cases, in the end the bromids do much more harm than good. In the first place by suppressing to a certain extent the evidence of an evil, which at that period is the most amenable to treatment, and in the second place by injury which these drugs often have upon the already diseased digestive tract, and lastly, the unusual effect which sometimes occurs to the cortex itself.

DISCUSSION.

Dr. C. G. STOCKTON—I have seen cases belonging to the class of cases the doctor has described so well; when I state that I state about as much as I can add to the discussion. I have seen cases of epilepsy in which the convulsions disappeared and there was no return. I have seen other cases in which the convulsions disappeared, but find only a temporary improvement, with a return of the seizures. My own opinion is that, first, many cases can be relieved by proper attention to the gastro-intestinal tract. Secondly, that in many cases there may be some improvement by aiding digestion. Thirdly, that there are many cases in which there is no improvement as far as can be found out.

Dr. LOCKARD of Colo.—I should like to call attention to some rational causes that existed in a case that I had recently. On the 12th of May last I was called to see a child, 2½ years of age; the messenger said the boy was about to die, for he was in convulsions. Upon arriving at the home of the child I found the child had epileptic seizures. I inquired into the causation or the history, and I elicited the fact that on the paternal side the great grandfather had been subject to epilepsy since childhood, he was then 64 years of age, and the attacks had begun in early childhood; when about middle age he moved to Colorado, when the attacks became less frequent. I further learned that one or two other members of the family, also on the paternal side, were victims of epilepsy. I therefore felt reasonably certain of the hereditary conditions being present. But to make sure that there could be no mistake in the diagnosis, and that it might possibly be a case of poisoning, because the attack came on so suddenly, the child being perfectly well all its life, I gave a hypodermic of apomorphia and I soon got the stomach contents. The attack had come on soon after dinner. The contents contained some blood that had been swallowed; nothing else was found. The child soon rallied, and the next two or three days was apparently as well as ever. It seemed to be a case of hereditary epilepsy. It was also discovered that the child had a phimosis, but because micturition was not difficult, an operation was refused. Here was found two pretty rational causes for the attacks. After the second day the child began to be restless and irritable; he would rouse from his sleep suddenly, and he grew gradually worse. The parents then called me in again, and I found symptoms of meningitis. On the following day there were more symptoms of meningitis, and in the course of twenty-four hours it turned out to be a typical case of tubercular meningitis typical in every respect. The child grew worse, Cheyne-Stokes respiration appeared, and the signs were as typical as I ever saw. The child died three weeks after the epileptic attack. Here is a case in which we had two apparently rational sources to draw from. Yet the resulting subsequent course proved the attack to be due to tubercular meningitis; this should make us bear in mind that there may always be other causes of convulsions; we should especially look out for meningitis. I think in this case that the sudden development of tuberculosis brought on the attack.

Dr. TYSON—Doubtless all of us have had cases of epilepsy quite as difficult in explanation; some of them can be explained as Dr. Bond explains them, partly the result of reflex irritation and absorption of toxic substances. I remember two cases, both occurring in adults. One was in a girl, who had terrific convulsions until she was relieved of a tape-worm. Another occurred in a young man, who had convulsions for two or three years, and who was the victim of obstinate constipation. He had no attacks after his constipation was relieved. There are a few instances in which this condition is a result of Bright's disease; I am satisfied, though, that the reverse is true; that is, cases that are supposed to be due to Bright's disease are actually cases of epilepsy. An examination of the urine is important in these cases in order to settle any question. It is rare, but it does occasionally happen, that toxic substances and diabetes also may produce convulsive seizures of this kind.

Dr. ALLEN A. JONES—This paper is one of great importance and calls to mind some cases that I have had in which there has been not only the probability of auto-intoxication but occasionally a condition which gives rise to irritation of the stomach and to reflex disturbances. One case that I now have under my care and observation is that of a boy, aged 9, who had numerous convulsive seizures before I saw him. After going over the case carefully and eliminating some of the factors which might cause the convulsive seizures, I finally found a gastric catarrh with hyperchlorhydria, with gastric dilatation. After finding these conditions and placing the boy upon a restricted diet, and instructing the parents that the boy should not be allowed to bolt his food, and giving the patient HCl after meals and otherwise giving directions as to the hygienic living of the child, the convulsions diminished in intensity and frequency until now, fourteen or sixteen weeks have passed, there is only the slightest evidence of disease. I never had a chance to see the case in a convulsive seizure. I am satisfied, however, that the boy should be classed as one having had epilepsy. He should be watched for several years.

Dr. SIMME of Kentucky—I should like to state in confirmation of Dr. Bond's paper, that 95 per cent. of the cases of epilepsy, whether petit mal or grand mal coming under observation have been from reflexes from alimentary causes. This is true whether it occurs in infancy, childhood or in adults. Consequently I take the position that in the majority of cases the best remedy should be the regulating of the diet in regard to quality and quantity.

Dr. ANDERS of Philadelphia—If I understood Dr. Bond correctly he advises against the use of bromids in the treatment of epilepsy. In cases connected with certain causal factors it would be proper to drop the bromids and direct attention to the removal of the cause. In cases where the gastro-intestinal canal is disturbed, the question then might come up if it would not be better to treat the case in another way. Cases may occur in your practice in which the bromids are tolerated, where there is not the slightest evidence of gastro-intestinal disturbance, here it is certainly the first duty of the physician to continue the use of the bromids as the best means to ameliorate the attacks and the frequency of occurrence.

Dr. WEST of Galveston, Texas—I understood the gentleman from Kentucky to say that 95 per cent. of the cases of epilepsy were due to gastro-intestinal irritation; if that be the case why should so many of these cases be absolutely incurable?

Dr. ALLEN A. JONES of Buffalo—I should like to ask Dr. Bond the conditions of the eyes in the cases he reported.

Dr. ROBINSON of Illinois—I am much pleased to hear the paper read. It has been my experience that the diagnosis of epilepsy in children is not always easy; it is often very difficult, because we find so many convulsive seizures in children that are not epileptic. Last winter I was called to see a child, six weeks old, and could not determine the cause of the child's convulsions. A careful examination was made and I could give no reason for the seizures until I found small boils or abscesses upon the head of the child. I came to the conclusion that the child was pyemic; the abscesses upon the child's head had existed since birth and the blood was poisoned. The treatment directed to that condition was followed by recovery. The convulsions in this case were probably due to toxemia.

Dr. BOND of Richmond, Ind—Four cases were presented with relief of the particular cause and it was shown that they do as well without bromids, if attention be directed to the alimentary canal by eliminating the products known to be in the canal. These cases do better without the bromids.

Of course there are many gentlemen who attend cases in childhood who see many cases due to various causes which are not epileptic in any sense of the word. Every one knows what cortical disturbances are; patients come to you with a history of having had epileptic seizures for a long time. As soon as the trouble is removed the patient recovers.

ON NATURE'S CURE OF PHTHISIS AND AN EFFORT TO IMITATE IT.

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BY JAMES T. WHITTAKER, M.D.
CINCINNATI.

Schlenker made a complete autopsy of 100 bodies of adults and children, subjecting the lungs, especially the apices, to thorough scrutiny, and examining minutely the mesenteric, bronchial and cervical glands. Of the 100 bodies, 66 were found to be tuberculous, and of these cases tuberculosis was the cause of death in 53 per cent., was of great importance in 6 per cent., and was latent in 41 per cent. of cases. These numbers are minimal because the examination was macroscopic, not microscopic, and because, even with the most critical examination by a special expert, concealed depots can be overlooked. A true estimate of the frequency of this infection can be derived only from tests with tuberculin. In this way, Kossel, one of Koch's assistants, who has devoted himself especially

to the study of tuberculin under Koch's personal direction, found that 2459 children at the Berlin Dispensary, tested as they came, reacted to the old tuberculin. Tuberculosis was evident in but four of these cases; in all the rest it was latent. The conclusion was that 40 per cent. of city children secrete tuberculosis in some part of the body. This test has already raised the ratio in cattle in various places from 15 per cent. to 40 per cent. No pathologist of repute will dispute the assertion that tuberculosis is present in two-thirds of mankind.

It is universally conceded that two-sevenths of mankind succumb to tuberculosis of the lungs alone. Including cases of intestinal, bone, joint and gland infection, it would be perfectly safe to raise the limit that minute amount which would bring the fraction to two-sixths. We will say, therefore, to be within the limits of perfect safety, that two-thirds of mankind are affected with tuberculosis and one-third dies of the disease. Therefore, in one-half of all the cases recovery is complete, or the disease is reduced to such quiescence as to become practically non-existent.

What is the process of cure in these cases? Nearly all the cases which have the benefit of altitude recover. There is something in altitude which in the first place gives immunity and in the second place arrests the progress of the disease. Individual cases recover also in all other regions of the earth, under all climates, with every kind of treatment, and under every variety of surrounding circumstances. There are conditions, therefore, under which patients affected with tuberculosis *must* recover, and others under which they *may* recover from the disease. What factors peculiar to altitude or common to all places may be adduced to account for these recoveries? An autopsy reveals in the cases the presence of adhesions, of nodules, of cicatrices and cirrhotic induration. The natural processes of cure would seem to be initiated, 1, by means which in some chemical way destroy the tubercle bacillus directly, as by the action of toxins or antitoxins, or 2, indirectly by sterilizing, immunizing or invigorating the soil.

Notwithstanding the great resistance of the tubercle bacillus, chlorin, carbolic acid, corrosive sublimate, the cyanides, and many other agents of great bactericidal power, destroy or inhibit the growth of the tubercle bacillus in various culture soils. None of these agents, however, is found natural in the body; therefore, they need not be considered here.

But we must bear in mind that phthisis or tuberculosis pulmonary as we see it, is not a simple, but is a mixed infection, whereby toxins are intensified through symbiosis. Certain micro-organisms antagonize, others intensify each other. The engrafting of the streptococcus pyogenes upon the tubercle bacillus produces toxins of higher degree of virulence than belong to either alone. One of the most essential factors in the treatment of tuberculosis is the prevention of mixed infection, especially with the streptococcus.

CREOSOTE.

Do we get any light as to natural processes from, or any successes with drugs? Creosote is the only drug which has held its place in the treatment of phthisis. Does it sterilize the soil and is there any such substance produced in nature? Unfortunately there is no good working theory to explain the action of creosote. Summerbrodt admits that a scientific explanation is still lacking, but maintains that creosote alters the chemical properties of the juices of the body so that they no longer furnish a suitable soil for the tubercle bacilli, the colonies of which will not grow in it. Ludwig claims that creosote destroys the toxin of the tubercle bacillus, and Peter ascribes its virtue to the substitution of a curable hyperemia for a tuberculous hyperemia. Guttmann found that in a solution of 1:4000 creosote exercises a marked inhibitory action on the growth of tubercle bacilli. It is certain that creosote in the dose in which it can be administered has no direct influence on the tubercle bacillus or on the streptococcus.

Cornet showed that the introduction of large quantities of creosote in the stomach did not prevent the development of the tubercle bacillus in guinea pigs. In the proportion of 1:100 it fails, after 24 hours' exposure, to destroy the tubercle bacillus in sputum. Sternberg found that a saturated aqueous solution does not destroy the tubercle bacillus in cultures in 12 hours. Trudeau observes that rabbits inoculated with tuberculosis and treated with creosote subcutaneously present the same lesions as control animals not so treated. Nevertheless the virtue of creosote is undeniable. It is admitted on all sides that creosote destroys all organisms that induce fermentation in the stomach without affecting the processes of digestion, and the virtues of creosote have been ascribed to the improvement of nutrition which sets in in some cases surprisingly soon. The remedy acts best in largest dose immediately after meals. Perfectly pure creosote is entirely void of toxic properties.

What would seem to lend support to the view that creosote acts by improvement of nutrition is the superior virtue of the carbonate of creosote, the so-called creosotal, the least irritating to the stomach of all the preparations of creosote or guaiacol. Pure creosotal has a syrup-like consistence and unless warmed is so thick as to drop with difficulty. As it is insoluble in water and only sparingly soluble in alcohol, it is best given in oil and milk. It exercises its best effects in doses of 40 to 60 drops dissolved in cod liver oil, or in warm weather suspended in half a glass of milk taken immediately after meals. My own experience confirms that of Gram, who finds after the use of large doses of creosotal a more rapid improvement in the general condition and of the local symptoms in a larger number of cases than after the creosote, and in a certain number where creosote fails. But as in the case of creosote itself, it may not be predicted in the individual case whether the effect will be good or not. As with tuberculin, it is necessary to try to find out. Neither creosotal nor creosote exercise any direct effect upon the streptomycosis, as neither agent will arrest or control acute hectic fever which depends upon an inundation by the streptococcus. Creosote may have some sterilizing properties, ill defined, but at the present time the conclusion is, subject to revision by enlargement, that creosote acts by improving the nutrition and thus invigorating the soil. We have no knowledge of any manufacture of creosote in the body.

TUBERCULIN.

The only natural agents of which we have any knowledge that are known to exercise an inhibitive action upon the tubercle bacillus are some of its own products, to-wit, the various so-called tuberculins which have been extracted from culture soils. These agents, which constitute the most remarkable contri-

tion to materia medica in modern times, give us power of absolutely recognizing the disease in its inception, and of nearly completely controlling it long as the disease remains pure. There is nothing ubtle in medicine. Many obscure cases of failing lth, of anemia, pleurisy, bone disease, are thus wn to be tuberculous, and tuberculin, further used reatment, becomes a tonic in these cases of the very hest power. I have myself never seen any danger the reactions of tuberculin and have never seen in case a general reaction as severe as that which nds every vaccination. In either case extreme tions are due to impurities, and it is interesting know that the new tuberculin is now being pre- d in solid form to obviate the evils of contamina- . Tuberculin is produced in the bodies of tuber- ous patients. It is present, for instance, in the d of pleurisy, which will give a reaction in guinea . Doubtless many cases are naturally cured in way. But for the most part the tuberculin is duced slowly and the body grows immune to it.

ARTIFICIAL SCLEROSIS.

ross attempts at imitation of nature through the cesses of cicatrization were made by Landerer h cinnamic acid and by Lannelongue with chlorid zinc. Landerer set himself to work to convert a ue poor in blood vessels and showing a tendency aseation into a tissue rich in blood vessels with a dency to form granulations and cicatricial tissue. er experimenting with a number of agents he nd that cinnamic acid had the highest chemotactic perties, that is, that it would induce a migration leucocytes into the necrotic tissue of tubercle. s process, he declared, is followed by the penetra- of the mass by young blood vessels, the formation young connective tissue, with subsequent shrink- and contraction. In man there occurs also besides shrinkage, calcification. Of 50 cases treated in way 58 per cent. were reported cured, 20 per cent. roved, 4 per cent. unimproved, while only 9 per t. of the patients died. Unfortunately, other erimenters failed to get such good results. The st effort to secure leucocytosis by the ingestion of ous nucleins, enzymes, etc., find also only individ- support.

annelongue tried to induce sclerosis by the injec- s of the chlorid of zinc, finding after the intro- ion of this remedy an afflux of new tissue ele- ts which infiltrated the periphery of the tubercu- mass, penetrated it somewhat and surrounded it a fibrous wall which isolates the diseased tissue. e experiments fail, however, for the same reason he surgical. They overlook the seat and center he disease in the bronchial glands whence new nies issue for new invasions of the soils.

EXPOSURE.

Nothing in art approaches the efficacy of nature in rolling tuberculosis of the peritoneum by exposure hat structure to the external air. Many theories e been proposed to account for the really wonderful lts which followed this accidental discovery. But ll the theories offered, nothing is more satisfactory the simple exposure to light and air. Many of cases of typhlitis so happily controlled by simple sion are cases, not of appendicitis at all, but of rculosis of the peritoneum. Appendicitis is not ommon as measles or mumps, as some of the sur- s seem to think, but tuberculosis is.

CARBONIC ACID.

An attempt at imitation of nature consisted in producing hyperemia in order to secure the effects of carbonic acid gas. As Traube showed long ago, patients affected with disease of the heart attended by hyperemia of the lungs enjoy a certain immunity to tuberculosis, as do also individuals affected with emphysema. Rokitansky had remarked before upon the exemption from phthisis secured by certain forms of heart disease. Patients with deformed thoraces, hunch-backs, are also largely exempt from tuberculosis of the lungs, not on account of the limited expansion of the chest, but because the same amount of carbonic acid gas is distributed over a smaller surface. Workers about lime ovens are said to enjoy the same immunity for the same reason. Traube therefore proposed to treat the disease by developing carbonic acid gas in the stomach with hydrochloric acid and bicarbonate of soda. It will be remembered that Bergeon, at a much later date, attempted to secure the same effect by the injection of sulphuretted hydrogen gas into the intestine. Both observers reported good results, which, however, were not subsequently sustained. The latest application of this treatment is the method of Bier, which consists in inducing artificial hyperemia about tuberculous bone and joint disease by the application of an incomplete Esmarch bandage. But this method acts only temporarily and only in individual cases.

ALTITUDE.

Is there anything which acts in all cases? There is universal testimony to the effect that altitude actually cures phthisis. It is accepted, in fact, that climate, meaning for the most part the climate of altitudes, is a remedy so powerful as, if practicable in every case, to render superfluous every other treatment. We may ask ourselves, therefore, what are the peculiarities of the climate which control phthisis?

Altitude acts in various ways. First, by dryness. High air is dry air, and dryness is inimical to the growth of the tubercle bacillus. Second, by cold. On the average the temperature falls about 3 degrees for each 1000 feet of elevation. Cold favors dryness. It is also a stimulus. It increases the tendency to sleep, exemplified best in states of hibernation, during which there is little waste. Third, by sunshine. Tubercle bacilli are killed under an exposure to direct sunlight in a period varying from a few minutes to a few hours, according to the thickness of the layer exposed, and by ordinary diffuse daylight in six to seven days. It would appear from the analogies of photography as if the germicidal action of light is due to the increased oxidation. Fourth, by increase in the quantity of ozone, the natural purifier, which has in the minutest quantities enormous bactericidal effect. Fifth, by purity, as the air becomes more and more free of organic matter, including bacteria, as we ascend. Miquel found the air of Paris to contain 55,000 bacteria to every ten cubic meters. These bacteria decreased steadily with altitude until at the height of two and one-half miles they disappeared entirely. Sixth, by rarefaction, which is the most important factor of all. The air grows lighter and thinner as we ascend, until at the elevation of Potosi, Bolivia, 13,300 feet, it is only one-sixth as dense as at the sea. The rarefaction of the air leads to increased exercise of the heart and lungs and thus to continuous, even though unconscious, gymnastics. The

dyspnea, palpitation, vertigo, which attack the mountain climber, the cyanosis and unconsciousness experienced by the aeronaut at still greater heights, depend upon insufficient oxygenation of the blood.

POLYCYTHEMIA.

Now, as there is no elevation which man has ever attained in which the quantity of oxygen in the air is not more than sufficient for the wants of the body, it was for a long time difficult to account for these symptoms, which are sometimes embraced under the term "mountain sickness," in altitudes. The explanation was finally found in the phenomena of pressure. The blood corpuscles will take up oxygen only at a certain degree of pressure. Any great variation from this degree is attended with difficulties which are sometimes serious. Bert found that a pressure of fifteen atmospheres is fatal. On the other hand, the blood corpuscles will not take up enough oxygen under a greatly diminished pressure, and nature adjusts herself to this difficulty by increasing the number of blood corpuscles and diminishing their size. The curious fact is observed, therefore, that as the flora differ at different altitudes, so do the number and size of the blood corpuscles. It was Viault who first observed that the number of red blood corpuscles was increased one-half at the height of 14,000 feet in the Cordilleras. This fact has since been abundantly confirmed, so that at the present time tables are constructed showing the number of blood corpuscles at different altitudes, ranging from 4,974,000 at Christiana, to 5,752,000 at Zurich, 1,373 feet; to nearly 6,000,000 at Reiboldsgrün, 2333 feet; to 7,000,000 at Arosa, 6000 feet; and to 8,000,000 at the Cordilleras in Peru, 14,640 feet.

Here, now, is a clue which nature gives and which should be followed up. The specific value of altitude is therefore not merely exposure to outdoor air and sunshine, though by the so-called out-door treatment or porch treatment we imitate the methods and secure the virtues of oxygenation and insolation in the greatest possible degree in low levels. But the polycythemia is an accommodation to the lessened pressure, for the same increase in the number of blood corpuscles in animals may be artificially produced by confinement in a rarefied atmosphere. Thus Raynaud put a rabbit under a bell glass jar, taking the precaution always to have two jars that the animal might be transferred from one to the other for the sake of cleanliness, reducing the atmospheric pressure to an equivalent of an elevation of 9500 feet. The rabbit remained in this atmosphere a month and a half and came out fat and healthy. Examination of the blood showed it had absorbed 21 c.c. oxygen, while its fellows at sea level had absorbed only 17 c.c. This capacity of greater absorption of oxygen was obtained in four weeks.

May we imitate this process in the pneumatic cabinet? I made a number of experiments with men in this way, but obtained no favorable results whatever. But the pneumatic cabinet may in no way compare with mountain climate. In the first place, the stay must be necessarily short. In the second place, the individual becomes contaminated by his own exhalations, as the enclosed chamber necessarily implies a defective ventilation. The experiments made hitherto have shown no increase in the blood corpuscles or in the hemaglobin and still less that increase in strength which develops so rapidly in the mountain climate.

As the virtue of the mountain climate under a combination of all the factors found in altitude seems to depend chiefly upon the increase in the number of blood corpuscles, it occurred to me to try to secure this increase in a more direct way.

TRANSFUSION.

The transfusion of blood is as old as the history of medicine. Such extravagant ideas are entertained regarding the value of it as to have led to its abuse and abandonment altogether. But transfusion is one of those things that will keep coming up. It has been revived from time to time with various improvements in the method of use, but has become practically limited in our day to the treatment of hemorrhage and to poisoning by certain gases. Dr. Stocker mentions the fact that the introduction of defibrinated human blood succeeded in rescuing a case, after artificial respiration, fresh air and Faradization of the phrenic nerve had remained without effect. The writer once succeeded in the same way in recovering a patient who had been bled *ad deliquum animi* under the hemorrhage from gastric ulcer. Arm to arm transfusion, as by the direct method of Aveling or by the indirect method of v. Ziemssen, by the aid of three syringes, has been rendered practicable in expert hands. But transfusion by the amateur is not without danger, and on account of the difficulty of obtaining blood at the proper time, is limited in use. Aside from the inevitable danger of coagulation, direct transfusion, even when most successfully practiced is sometimes followed by fever, which is looked upon as a sign of ferment intoxication (Heineke). Sometimes this ferment intoxication shows grave symptoms, bloody stools, tenesmus, even sudden death by asphyxia. The occurrence of dyspnea or cyanosis should interrupt the process at once until these symptoms disappear.

The difficulty, often insuperable, of obtaining the blood of man has led to the use of the blood of the lower animals. But there could be no question that the direct injection of the blood of lower animals into the veins of man. Landois showed long ago that heterogenous blood, that is strange blood, in the proportion of 20 per cent. of the original mass caused death on the first and second day, while less than 1 per cent. produces great weariness, diarrhea, dyspnea and a tendency to real hemorrhage, vomiting of blood, extravasations, bloody discolorations of the urine. Ponfick finds that hemaglobinuria constantly occurs even after the injection of 1 per cent. of strange blood into the vessels of the dog. Landois demonstrated further that strange blood corpuscles act like foreign bodies and are rapidly destroyed. The free hemaglobin colors the transudations and the urine and forms cylinders in the urinary tubules, destroying the urinary secretion. The horse and ass, the dog and fox, different varieties thus of the same species, may exchange blood and it is only the blood of distant animals that may be regarded as heterogeneous, lamb's blood, for instance, in dogs and man. Von Recklinghausen reported a case of transfusion of lamb's blood in man followed by death in fourteen hours. In this case there was an exquisite amyloid degeneration of the liver.

In order to obviate these dangers v. Ziemssen recommended the subcutaneous transfusion. The author, who made a large number of experiments, found this method of value in the treatment of poison-

ing by gases and in certain chronic infections. He got his best results, however, in the treatment of scurvy and pernicious anemia. The subcutaneous transfusion has the advantage of being entirely free from danger. The blood thus introduced is speedily incorporated, so that the blood corpuscles actually multiply under its use. The method has, however, the great disadvantage of being so painful as to necessitate the use of anesthesia, a fact which soon led to its speedy abandonment. v. Ziemssen succeeded, however, in rapidly increasing the number of blood corpuscles in this way.

All these experiments were made with defibrinated blood. The blood was defibrinated both on account of the difficulty and dangers attending clot formation. The great desideratum was to secure a heterogeneous blood which could be introduced into the body with all of its ingredients quickly, safely, and pleasantly. In the ordinary process of defibrination the blood is stirred with rods, and the coagulum, which contains the bulk of the corpuscles, both red and white, is removed. But it was exactly the corpuscles which are wanted in the imitation of the natural process of polycythemia. It is the increase in the number of blood corpuscles in mountain air which enables animals, in spite of the reduction of pressure, to retain the oxygen of the blood in normal degree. This process of acclimatization is usually very rapid, the increase to the normal number of corpuscles being reached in two weeks.

Although it was not to be expected that corpuscles of heterogeneous blood or even of homogeneous blood could be bodily incorporated, it was fair to assume that the ingredients, especially the oxygen and the hemaglobin might be absorbed. I wanted to get also all the bactericidal properties of the blood. Fodor showed that fresh blood destroys numbers of bacilli, the serum more rapidly than the corpuscles as it is always seen that bacteria perish more slowly in the coagulum than in the serum. It was desirable also to have the blood of the youngest animals, as older blood loses its power to destroy bacteria. The immunity of sucklings may find its explanation in this way. The blood is therefore its own disinfectant inside the body. The increase in number of red blood corpuscles in animals increases the resistance and lessens the susceptibility to experimental inoculation of disease. It had, in fact, long been established empirically that anemic people are more easily disposed to infection than others. It was desirable also to increase the number of leucocytes. The process of leucocytosis marks a period of crisis by the liberation of antitoxins. The bactericidal property of the blood which resides chiefly in the serum is derived from the white blood corpuscles, in whose cells, according to Gärtner, all microbicidal power slumbers. The dissolution of the white blood corpuscles, under the action of bacteria liberates the antitoxin which destroys the bacteria. This bactericidal power is therefore weakened by hydremia, anemia, chlorosis and hemorrhage, so that the victims of these diseases, or puerperal women who have lost blood, are more disposed to infectious diseases and suffer elevation of temperature under slighter injury. Richter-Loewy finds that the introduction of agents into the blood which produce a hyperleucocytosis, such as peptones, cinnamic acid, or spermin, fortifies or protects the individual against infectious diseases, that is, that the increase in the leucocytes brings about a cure in cases in which the result should be fatal without such treatment. It is a question if the enormous multiplication of leucocytes in leucemia be not a conservative effort to destroy the toxins of some malignant process.

It is a fact that hyperleucocytosis occurs during the development of malignant tumors and disappears after operative removal of the tumor. It is a fact also that leucocytosis has prognostic value in that the slight development or absence of it is an unfavorable sign. v. Jaksch goes so far as to recommend the induction of an artificial leucocytosis by the use of pilocarpin, antifebrin, etc. Certain tonics produce an increase of leucocytosis, tincture of myrrh, tincture of cinchona and other bitters (Hirt) further many ethereal oils (Binz) and the intense odors of fruits and spices (Pohl). The influence of perfumes upon neuralgia, headache, etc., may be thus explained.

Schattenfroh was able to obtain bactericidal materials from the polynuclear leucocytes after freezing and again thawing. These materials are probably excreted from the living leucocytes. Bordet too finds that the leucocytes furnish bactericidal matters to the blood. This conclusion is reached by comparing the effect of the serum of an immunized animal with the edema blood of the same animal. The edema fluid has no leucocytes and no bactericidal power. The blood has leucocytes and is strongly bactericidal.

Fischl of Prague, shows that the leucocytes contain a powerful protective agent against penetrating disease, as there was a marked increase of white blood corpuscles in animals that were saved from infections over those who died. The leucocytosis disappeared almost at the same time with the bacteria of the blood from the diseased animals. As the coagulum entangles most of the white blood corpuscles, it was necessary to prevent coagulation to secure their presence.

COAGULATION.

Coagulation sets in, as a rule, rapidly, within two to three minutes after venesection, and the process is complete in seven to eight minutes. The process of coagulation is closely connected with the life of the blood. The problems connected with it have received much study and are by no means settled as yet. The whole question is too complex for consideration on this occasion, when I have to speak only of means of arresting or preventing it. It may suffice here to say that the process is initiated with the changes characteristic of the blood of the cadaver, so that it may be said in a general way that the process of coagulation represents a beginning dissolution of blood and the prevention of it with simple means, may be regarded as the preservation of the life of the blood.

Coagulation is hindered by cooling, by increase of carbonic acid gas, whence it is that venous blood coagulates more slowly than arterial blood. It is prevented or delayed also by the addition of water, egg albumin, sugar and glycerin. A mixture of the blood with trypsin or with pepton stops it. Freund found that the presence of oil prevents the adhesion of the corpuscles, which he considers to give the impulse to coagulation. Thus blood received into a vessel from which oil has been poured does not coagulate, and coagulation does not occur when blood is stirred with an oiled glass rod.

The most curious fact in this connection is the prevention of coagulation by leech bites, discovered by Haycraft. The severe hemorrhage which is sometimes encountered after the application of leeches, is

only rarely to be ascribed to the hemorrhagic diathesis, but is much more frequently produced by the peculiar principle found in the front part of the body and secreted in the mouth of the leech. After the injection of the extract of the leech into a vein, the blood which flows from the carotid artery coagulates only very slowly at the end of an hour. At a still later period the coagulability of the blood becomes more normal because the substance which prevented coagulation escapes through the urine. Landois extracted this principle as a clear, slightly alkaline fluid and experimented with it on a large scale. The extract of the leech head does not injure the red blood-corpuscles, and it has been proposed to utilize the solution in small quantities in the prevention of thrombosis. v. Sahli, and associated with him, Aguet, showed that the thrombi usually formed by foreign bodies introduced into the circulation are hindered in their formation by the extract of leech. The possibility of utilizing this serum, especially in heart disease in which there are thrombi and infarctions, will depend upon further experiments upon animals. The exact nature of this principle is not established, though it is known not to be a ferment, as boiling does not destroy it. Thepoison of snake bites, especially that of the viper, contains the same principle.

The bite of many poisonous snakes, with the exception of the cobra, induces a permanent fluidity of the blood. The blood serum of different varieties of eels (Muränen), according to Mosso, 1888, delays or prevents the coagulation of the blood of warm-blooded animals. Snake bites poison the blood, while leech bites do not hurt it. The leech extract destroys the fibrin ferment without perceptible alteration of the blood, and the injection of it into the veins of a living animal stops coagulability without producing a toxemia. Anything like a long duration of the effect is hindered by the fact that the substance is speedily eliminated by the kidneys.

Leeches are sold with us at the rate of twenty cents each. Although the amount of material furnished by a single leech would prevent the coagulation of a considerable amount of blood (I have not yet determined the exact amount), the expense of securing leeches for copious or frequently repeated transfusion would prove an obstacle to their use. It is probable that if equally effective means had not been found, a larger demand might have secured supply at cheaper rates.

Various drugs and chemicals have the same effect. Thus Horne found that the soluble salts of calcium, strontium or barium delay or prevent the coagulation of blood in the proportion of one-half per cent. Barium are stronger than strontium salts, and these than lime. Chlorid of barium distinctly delays coagulation in the proportion of one-fourth per cent. Chlorid of sodium, chlorid of calcium in 0.07 per cent. and over, still more delay the coagulation of blood treated by the above-mentioned salts. It has long been known that oxalic acid and the oxalates prevent coagulation. I have found in my observations that five grains of the sodium oxalate would prevent the coagulation of a pint of blood. But oxalic acid is poisonous. The sodium oxalate as prepared for me by Mr. Fennel, contains oxalic acid in the proportion of 30 per cent. The largest fatal dose of oxalic acid recorded by Taylor is sixty grains, so that this small quantity is not dangerous. In fact, in my observations no unpleasant effects of any kind were ever observed after the use of the sodium oxalate. I have been led to abandon this preparation, however, by the observation that the blood could be kept fluid by a number of agents, each of them constituents of the blood and therefore each of them articles of nutrition. These various agents are in common language common salt, the bicarbonate of soda and the sugar of milk. Thus a teaspoonful of common salt, two tablespoonfuls of soda and a tablespoonful of sugar of milk will keep a quart of blood fluid long enough for all practical purposes.

ALKALESCENCE.

The chlorid of sodium itself has a tendency to prevent coagulation. It also distinctly favors the hemapoietic process. The soda makes the blood additionally alkaline, and alkalinity favors additional bactericidal properties. It also favors osmosis. Alkalescence is one of the most important properties of the blood. It diminishes in anemia and cachexia and increases with improvement. The experiments of Calabrase showed that the alkalescence of the blood protects the body against the injurious effects of toxines. Alkalescence is connected with leucocytosis. Jacob holds it not improbable that the increase of alkalinity is due to a leucolysis. Bonne believes that increase of alkalescence increases resistance to the poison of bacteria. The alkalescence of the blood stands in close relation with carbonic acid gas. Krauss showed in unison with others that a high acidity and a remarkably low alkalescence is found under a great reduction of the CO_2 contents of the blood. The virtue of carbonic acid gas may find explanation in this way. Fever reduces alkalescence. Behring finds that the stronger alkalescence of the blood (corresponding to the greater amount of CO_2) of white rats furnishes immunity to milzbrand. So everything which has a tendency to drive out the CO_2 or to fix it in combination, limits the bactericidal property of the blood. Thus there is after all scientific basis for the carbonic acid saturation, and effervescent drinks are something more than merely grateful drinks to fever patients. Krauss demonstrated that while the urine in health became alkaline after the exhibition of two to eight grams of bicarbonate of soda, alkalinity occurred in fever only after the exhibition of twenty to thirty grams.

v. Fodor found that the blood of rabbits has much stronger bactericidal properties after the injection of an alkali, and finally reached the result in his experiments that the organism reacts to certain pathogenic infections with rapid increase of alkalescence, which is followed by a greater or less reduction of it. If the infection is fatal, this reduction is pronounced and progressive; if it is not fatal, or less marked, the alkalescence increases anew and may exceed the original degree, the animal becomes more resistant to the bacteria which caused the infection. Neumann showed that an artificial reduction of the alkalinity of the blood lessened the resistance of the animals to infection, and Fodor demonstrated that the increase of alkalinity under the use of the mineral alkalies increased the resistance, so that it could be said that the degree of alkalescence in the blood destroys the susceptibility of animals to certain infections. According to Poehl, artificial immunity which is carried to great height by successive inoculations after the method of Behring, finds its explanation in the arti-

ficially induced leucocytosis with a simultaneous increase of the alkalescence of the blood. Fodor and Riggler in continuing their experiments showed that the alkalinity of various infections, including tuberculosis, increases under immunization, so that the alkaline co-efficient of the blood serum stands in direct relation to the degree of protection. Thus the degree of alkalescence has great practical value as showing the effect of the immunization, antitoxic treatment, etc., and as showing the power of the body to overcome infection. Fatigue diminishes this alkalescence and renders the individual susceptible to infection. Loewy and Richter showed also that the cooling of the body is attended by a simultaneous reduction of the leucocytes and of the alkalescence of the blood, and explain in this way the contraction of disease under what is called by the laity the process of "taking cold." What is more to the point with us at this time is the observation of Bonne, who found that the reduction of alkalescence under cold, remarked by Loewy and Richter, was attended with an increased coagulability of the blood. The fulminant character of certain diseases has been ascribed to a constitutional reduction of alkalescence.

Finally I added sugar, because the various sugars, especially the sugar of milk, all delay the process of coagulation. Besides, the sugar of milk has high nutritive value and makes but little demand upon the digestive juices.

The addition to fresh blood of salt, soda and sugar of milk adds nutritive principles, preserves the corpuscles, red and white, intensifies the alkalescence, prevents coagulation and prolongs the life of the blood. Thus the first part of the question was solved.

HOW TO INTRODUCE IT.

The next problem, the method of introduction, which seemed to be the most difficult, turned out the most easy. The nutritive properties of the blood are so well recognized as to be appreciated by the laity, and it is the custom in some countries, especially in France, but also to some extent in our own country, much wider than is commonly believed, to drink blood fresh at the slaughter houses. Sometimes patients stand in rows waiting their turn, cup in hand, as at mineral springs. The drinking of blood, however, is nauseating to many people. It is objectionable also because the blood coagulates in the stomach, forming a mass which may even fatally interfere with the action of the heart. Blood ingested in this way has, in comparison with other equally nutritious food, no advantage, but on the contrary much disadvantage. Recent studies go to show that the principles of blood are not disposed of in the stomach, but must be discharged into the intestine to be digested and absorbed.

It occurred to me, therefore, to introduce the blood directly into the intestine, and after some slight experimentation it was found to be perfectly easy to inject large quantities of fluid blood high into the intestinal canal. The injection may be made with the common fountain syringe or the bulb syringe, but is easiest and best effected by pouring it into the funnel and tube of the common stomach tube, which is easily pushed into the rectum to and beyond the sigmoid flexure. If the fluid is now poured slowly, a large quantity of blood may be carried into the colon so that much of it will pass the ileo-cecal valve to reach the small intestine. This injection is much more bland and unirritating than the same amount of water, and is easily retained by all patients in the absence of any ulceration or deep congestion of the rectum. There is not the same desire, therefore, to discharge the fluid as in the case of a similar amount of water; not so much even as attends the injection of the same amount of olive oil. The injection is best taken at night with the patient lying upon the left side, and after the injection of it the patient should lie fifteen minutes further upon the back and fifteen minutes upon the right side, that the fluid may find its way throughout the colon.

I direct my patients to add a teaspoonful of salt, two tablespoonfuls of soda and a tablespoonful of sugar of milk to a pint of boiled water, and to pour one-half of this quantity into a clean glass jar, requesting the butcher to add to it one pint of fresh calf's blood. The fluid should be injected at once, or if this is not practicable, the jar should be put upon ice and the contents used within twelve hours. In no case should the fluid be heated, as heating favors coagulation and dissolution of the blood. This quantity should be introduced every night; in bad cases twice a day, morning and evening, and in all cases the bowel should be previously washed out with a simple injection of water. As a rule, to which there are many exceptions, the blood is entirely absorbed, so that often not even a trace of it is found on irrigating the bowel on the following morning.

The idea of using blood is so natural, the process is so simple and the results in many cases are so striking as to have led me to look up the literature to discover any former use of it in this way, and if so, the reason of its abandonment. For in all the recent studies concerning nutritive enemata, no mention is made of the use of blood. I find in the literature that Andrew H. Smith, of New York, first suggested and reported the use of *defibrinated* blood, in the *New York Medical Journal*, 1878, and that further reports were made in the Proceedings of the Therapeutic Society of New York and the New York Archives of Medicine of the same year. I learn further that A. Earnest Sanson made a report upon the use of blood clysters after the method of Andrew H. Smith, in the *London Lancet*, February, 1881. These were the first therapeutic suggestions. The report of Smith is based upon sixty-three cases, including thirty-eight of tuberculosis. In eight of these cases the blood could not be tolerated on account of irritability of the rectum or colicky pains. Ten cases remained uninfluenced by the treatment, or the improvement which showed itself had begun before the use of it. In twenty cases the good effect was distinct and was marked by increase of appetite and speedy disappearance of night sweats and diarrhea, lessening of cough, and especially by gain in weight. This treatment, however, was carried on in connection with the use of cod liver oil, brandy, expectorants and various remedies in address to the different symptoms. Nevertheless, distinct advantage could be ascribed to the injections, as after interruption of them the patient grew worse, but on resumption of them began immediately to improve and gain in weight.

The most striking results were obtained in cases of great impoverishment of blood. Eight cases of anemia of high degree were entirely cured. Five cases of dyspepsia from various causes experienced great improvement and were finally cured, including

one of chronic asthma. Two cases of exhaustion were markedly benefited, one after fistula and one after dysentery. One case of uncontrollable vomiting from ulcer of the stomach entered the hospital unconscious and apparently moribund. Clysters were given of pure blood while brandy and milk were given internally. The patient recovered consciousness completely on the next day, was soon able to take food into the stomach, and left the hospital cured in five weeks. The conclusion was that nourishment could be introduced in this way better than in any other, and that there was no danger in the method, though continued for weeks.

Hanks reported a case in which a patient who suffered from uncontrollable vomiting after hemorrhage from the uterus, was sustained by blood clysters until the stomach could retain its nutrition; Brown, a case of paralysis with threatening inanition in a child aged two years, in whom clysters of dried ox blood were used and perfect recovery was accomplished. Sansom reported two cases, one of gastralgia in a boy who could take no food, in whom there was retention of urine, blood and pus in the urine, inflammation of the ureter, probably from oxalic acid stone. This patient received four ounces of blood, at first once a day and later twice, gaining gradually in weight as the stomach recovered its tone. Another case of gastrectasia marked by extensive purpura, violent pain, vomiting and great anemia was recovered under the use of blood clysters twice a day, improvement beginning as early as the third day.

Möller in his report in the *Deutsche Med. Woch.*, Vol. vii, pages 45 and 46, communicates the experiments made by Mosler in the Griefswald Medical Clinic. He showed that while a part of the blood was rejected, a certain quantity was always absorbed. A woman aged 55, suffering with chronic enteritis, marked by great anemia, received every day for four weeks injections of five ounces of blood, the condition improving continuously. The number of blood corpuscles increased from 1,804,000 to 1,865,000. A second patient, who had twice suffered an attack of pneumonia, was now affected with extreme anemia from frequent nose bleed and hemorrhage from the bowels. This patient, edematous about the legs and face, with enlargement of the liver and albuminous urine, showed all the symptoms of anemia of the brain. Blood clysters, five ounces, were injected daily, the weight increasing from 119 to 124 pounds, the blood corpuscles from 960,000 to 1,136,000. Although in a third case the nutrition was sustained entirely in this way for one week, it did not seem to be determined that life could be supported indefinitely by these injections.

The experiments of Mosler were made with swine's blood, those of Smith, Sansom and others with ox blood. It will be seen that these observations and experiments were quite different from my own. In all cases the quantity was small, four to six ounces, and in all cases the blood was defibrinated. I used blood with all its ingredients, and instead of subtracting from it by the removal of any of its elements, I added to it principles of great nutritive value, salt, soda and sugar of milk, which served also the additional purpose of increasing the alkalinity, preventing coagulation, facilitating absorption, and above all things, prolonging the life of the blood. Further, the quantity which I used was four to six times as great as in previous observations, the easy retention of the larger amount in the great majority of cases being due to the blander character and to the deeper introduction of the nutritive fluid.

In my experiments I have lost a good deal of time in determining the best agents for preventing coagulation, so that I am able to report upon but twelve cases of phthisis and one of apparently pernicious anemia. I make this statement, therefore, only as a preliminary report. In two of the cases there was considerable difficulty at first in retaining the fluid. In all the rest the blood was held without effort. The patients without fever or with but slight fever showed a continuous gain in weight, but patients with high fever showed no improvement, and in one case of severe hemoptysis, under the charge of my assistant, Dr. Malsbary, the number and frequency of the hemorrhages remained uninfluenced. In fact, the fear was entertained that the injection of blood sustained the hemorrhages, but no improvement followed cessation of their use. The most decided change was seen in the cases of anemia, one of which—a seemingly fatal case of apparently pernicious form—after failure with iron, arsenic, and later mercury, gained twenty pounds in three weeks under the blood clysters alone.

The cases of phthisis marked by anemia were the most benefited and the most rapidly, registering gains in several cases of two to three pounds a week. The bactericidal virtues I had hoped to secure were by no means so pronounced, but the gain in nutrition fully equaled expectation. I can commend these blood clysters as far exceeding in nutritive value any other as yet devised. They are also, as a rule, better borne.

SOME USUALLY OVERLOOKED PHYSICAL SIGNS AND SYMPTOMS IN CHEST DISEASES.

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The tendency of the mind of the young doctor, and some times of the older one, is to look for the classical and typical changes in all chest diseases. He knows well what ideal bronchial breathing is; what râles are and the different sorts; what pectoriloquy, egophony, amphoric sounds and metallic tinkling mean. He knows flatness on percussion and dulness when marked; and cracked-pot percussion sound with open-mouth breathing. And if these or a combination of them are found in any case, diagnosis is supposed to be thereby relatively easy.

In our early studies we learn to look for these signs, and are disappointed sometimes when the symptoms have led us to expect to find them and we do not find them. Failing to discover them we sometimes wholly fail to detect other ample physical signs, that are however less prominent and pronounced. The descriptions in the text-books have given us these and similar classical signs as they are found in their perfection, and we are liable to dwell on them so fully that anything short of their ideal manifestation we pass over and hardly notice. This is one of the faults of our usual method of study which is to consider the sick from the standpoint of the classical description of the different diseases, and try to find the right picture to fit each case, rather than from the clinical standpoint

of the symptoms and signs which the patients as they come to us actually have.

In certain lung diseases, notably tuberculosis, it is of the greatest moment to be able to make an early diagnosis. Many a patient, who must otherwise die, could be helped if the diagnosis were made early, and before the different or any of the classical physical signs are completely developed. To do this we must invoke several aids and tests not usually thought of. We must learn to detect slight changes from the normal conditions, the first intimation of those variations of sounds in auscultation and percussion that progressively develop into classical signs. The doctor who examines his cases critically sees forty-fold more of them having these slight changes, than of those which show the ideal signs.

Pulmonary tuberculosis, fortunately for this study, is usually unilateral at beginning, and so we have early a normal side of the body for comparison. By examining the two sides critically, and comparing them with each other repeatedly, it is often possible very early to detect alterations that point unmistakably to lesions that are progressing. We perhaps find on one side a slight lessening of the force and loudness of the vesicular murmur on inspiration. Or there is a slight increase in expiratory sound at first without a particle of the quality known as tubular. Can we hear the expiratory sound better on one side than on the other? If so, there is an abnormal condition in one lung, either where the sound is louder or softer, of course always making allowance for the slight disparity in sounds between the two apices. Later, if the change progresses actual tubular breathing may be heard, at first with so little of the tubular quality that it can barely be perceived.

The two sides should be gone over everywhere carefully, and corresponding points of the two critically compared, to see if any anatomic region can be found where there is even a slight difference between them in: *a*, length of the inspiratory sound; *b*, intensity of the normal vesicular quality of that sound; *c*, length of the expiratory sound; *d*, intensity of this sound and the elevation of its pitch above what is normal; *e*, vocal fremitus on the uttering of words that cause an extreme degree of vibration, as *ninety-nine*, and *f*, the transmission to the auscultating ear of the ordinary voice and soft whisper. Râles should be searched for in deep inspiration with profound expiration and on voluntary coughing. Tuberculosis usually begins in a circumscribed region of one lung, and is often first seated in the bronchial mucous membrane. If there is any tendency to recovery, any conservative power, it soon causes a deposit of adventitious fibrous tissue (fibrosis) through contiguous lung tissue, which invariably changes the physical signs and in the way indicated, only a slight change being perceptible at first and the signs being most changed nearest the focus of the disease, and shading off toward normal sounds farther away.

Finding any of these slight changes we should carry our comparison of the two sides to other regions, all over the lungs, and find where they are most evident. That will be nearest to the focus of the tuberculosis if this disease is present. If a deposit exists in an apex, fibrosis will spread from that point. The back is the best region for comparison of the two sides. Listening over the lower zone of the lungs posteriorly the sounds are absolutely alike and normal on the two sides; as we rise step by step, listening over every half-inch vertically and changing the stethoscope repeatedly from one side to the other we soon strike a zone, perhaps at the lower angles of the scapulæ, where we can barely perceive that on one side the vesicular murmur on inspiration is a trifle less pronounced and the expiratory sound perhaps a trifle more so and longer than on the opposite side at the corresponding point. One inch higher up this disparity is, while apparently not more marked, yet slightly more perceptible, which means that it must be more marked. Above this level the difference is progressively greater; the vesicular murmur is, as we ascend, growing less and the expiratory sound greater, louder, longer and stronger, and soon higher in pitch. Perhaps near the spine of the scapula the expiratory sound is longer than the inspiratory, and is definitely tubular and has a pitch perhaps as high as the inspiratory sound. Over the seat of the deposit, if the bronchi are not closed by phlegm or otherwise, this tubular breathing is most striking, and is ideal if the deposit is extreme; at the same time the vesicular murmur on inspiration may be nearly gone. But if the deposit or thickening of the connective tissue is slight, the most pronounced change in the sounds does not reach an entire ablation of the vesicular murmur on inspiration, nor is there any ideal bronchial breathing, but only a slight increase in the loudness and length of the expiratory sound.

As the expiratory sound increases in loudness and rises in pitch there is always, other things being equal, a corresponding increase in the vocal fremitus over the region, as well as in the transmission through the chest wall of the voice in phonation and whisper. With patulous tubes these sounds increase in loudness if not always in distinctness, as the solid substance of the breathing organ increases in mass. For the interest of the patient it is in cases of just such slight alteration as here indicated that the signs are of paramount importance, that is, mainly in cases of incipient phthisis. This careful method of auscultation from side to side and the testing of the fremitus and voice transmission, should be made in all cases where there is a particle of question as to some disease of a lung.

Many things beside tuberculosis may cause a slight disparity between the two sides of the chest, and pleuritis is one of them and rather a common one. If the difference between the two sides is slight and uniform over the whole of both lungs at the back, and there are no other signs, then a former pleuritis is probably the cause. The disease may have occurred many years before, producing slight changes in the superficial portions of the lung, probably in the shape of permanent thickening of the connective tissue, whereby the vesicular murmur is a little reduced on inspiration and the expiratory sound is prolonged. The thickened tissue of a cured tuberculosis makes disparity of sounds between the two sides, but not a uniform one; the difference is greatest over the lesion.

In many cases of considerably advanced phthisis the physical signs are markedly reduced, especially the râles, by deep inspirations and failure to expire freely. The result of this is a dilatation of the bronchi and lung tissue to such a degree that the moving air does not disturb the phlegm to cause râles, and the otherwise marked bronchial breathing is nearly abolished. In a few incipient and slight cases this trick of many patients is quite enough to hide all the signs. Patients must sometimes be taught and induced to expire profoundly to enable us to detect fine râles in

bronchi of only moderate size. It is an impulse of many patients to make the chest large for the doctor to listen to; it is either an act of politeness or to show themselves at their best. They first increase the lung air contents enormously by expansion, then take in and expel but little air with each respiratory act, so that the residual air is greatly increased and the bronchi are distended, and the phlegm that lines them is not disturbed and so no râles result. Let a full expiration be made and râles at once appear. Failure to resort to this maneuver has several times caused an early diagnosis, that was perfectly possible, to be missed in a case of incipient phthisis confined mostly to the bronchi. Nor should one trial of this measure be regarded as sufficient in a doubtful case, but repeated similar tests should be made.

The diagnostic value of extreme expiration is not confined to the production of râles by the undisturbed flow of air through the narrowed air channels. Sometimes if the patient will voluntarily cough at the end of such an expiration râles will be most unexpectedly brought out that could not occur without it. This test should always be attempted in a doubtful case. The explosive blast of air may under forced expiration easily move some phlegm, creating a sound audible to the auscultator, when no amount of deep breathing could produce it.

The limit of possible expiration should be secured, with open-mouth breathing in making the test with the fingers or a soft hammer for cracked-pot percussion sound. This will often produce it to a slight degree when it could not otherwise be developed. I do not undertake to say amidst the doubt on this point, just what a slight cracked-pot sound always means in disease of a lung, but when it can be produced on one side only, and especially in conjunction with slight râles, even if both are made possible by the maneuver referred to, it certainly denotes some disease of the part, and that in beginning cases is important.

The average patient does not know how to make profound expiration. Tell one to do this and he will at first as likely take a deep *inspiration*. The human mind, save in the susceptible and very teachable and adaptive years, can not do a new sort of muscular evolution off-hand on simply being bid to do it. One must be taught. Profound expiration is such an act, open-mouth, normal breathing is another; and in our efforts at teaching them people are as amusing as they are in that other experience of doctors with them, when bed-patients are asked to turn over on their backs. Fully ninety-nine per cent. of them will turn themselves prone with their backs uppermost, or start to do it, before they discover their mistake.

In a lung with beginning tubercular deposit in the upper part near the larger bronchi, the vesicular murmur is sometimes lessened over almost the whole lung, except the part that lies directly above the deposit, and there is very little expiratory sound with little of the tubular quality and few or no râles, while the vocal fremitus is still moderate in degree and the percussion resonance is nearly normal, but there is reduced transmission of voice sounds. There seems no way of explaining such a state of things but by assuming a complete closure of some of the bronchi, by pressure from without or by thickening of their walls or by thick phlegm within them. For the lungs are full of air as shown by the resonance on percussion; there can be no great consolidation, and if tubes are only partially closed there is sure to be râles of some sort, and usually many of them.

Early in most cases of unilateral, localized tuberculosis, some aid to diagnosis may be found in the symptom, usually neglected, of greater cough during recumbency on the affected side. If there is much phlegm having a fair degree of fluidity, and the local seat of its formation does not reach to the lateral periphery of the lung, and usually in the beginning it does not, it is sure, when the patient lies on the bad side, to run down into the smaller bronchi by gravity and provoke cough. If he lies on the opposite side gravity carries the product into progressively larger tubes where it can spread out, its bulk lessened by drying, and adhere to the tube-walls without causing much cough often for many hours, even to the limit of a night. In the morning the activity of the patient and perhaps the taking of food and drink, induce a paroxysm or two of cough and the mucoid accumulations of the night are expelled. As soon as the lesion extends to the lateral periphery of the lung, or if it should happen to begin there, so that its tubes and perhaps its air vesicles are full of fluid this test will fail. But it must be rare that for this reason it would fail in an incipient case; it more often fails from the paucity of the secretion. It is not at all unusual for this symptom to be pronounced early in a case and exactly the reverse symptom be present later when the air channels of the periphery of the affected lung become full of muco-pus; and on rational grounds this is what we should expect. The cough then is least when lying on the diseased side.

A striking tendency to error in considering chest signs is shown in cases of fluid in the pleural cavity in little children. In a considerable majority of instances this condition is at first overlooked, as it is often missed throughout the whole sickness. This error is not confined to young doctors but comes often enough to veterans. It comes probably of the double mistake of supposing that the physical signs in children and adults are the same with given pathologic conditions; and in taking too literally in diagnosis certain rules which have grown into the literature and seem altogether rational, but which are unreliable and lead to many pitiable blunders.

Dulness on percussion is a sign in pleural effusions, but in small children there is little or no dulness over the lower part of the chest, especially on the left side; the gas in stomach and bowels almost completely masks this sign. If the pleural cavity is full to the very apex there is dulness, even flatness at the top, which by absence of dulness low down often leads to the erroneous theory of apical consolidation of the lung.

The books say, and it is a fatally false guide, that the intercostal spaces bulge. They do when the pleura is tense nearly to bursting, once in a hundred cases, not more. Why should such a misleading statement be perpetuated through generations of writings! Why not have said that the intercostal spaces are less depressible and more firm, and been correct and consistent?

It is well understood that lung sounds are not much transmitted through fluid; but over a child's pleural cavity full of fluid faint bronchial breathing is heard. This fact, with the absence of bulging spaces, leads many doctors to dismiss the theory of fluid in the cavity, although vocal fremitus is absent or greatly reduced and the heart is beating far to the right or left of its normal position. The change in the fremitus (if the bronchi are patulous) must mean fluid or air in the pleural sac, and the heart does not move

without assistance; yet we ignore these facts because we hear bronchial sounds or distant murmur, fail to find dulness in the lower chest zone, and the intercostal spaces do not bulge.

DISCUSSION.

Dr. E. FLETCHER INGALS of Chicago—The paper which has just been read has many points of interest to many physicians and I think they can not be insisted upon too strongly. The majority of the points are familiar to most of us, but to the young physician particularly it is easy to point out discrepancies between actual facts and those laid down in the text-books. It is especially important in the early stages of phthisis, where the disease is localized in the beginning. There is a decided or a slight change from the normal if the disease is limited to a small portion of the lung and that is a grave sign. We must remember that similar changes occur in bronchitis and, not infrequently, in pneumonia. This should be taken into careful consideration before pronouncing diagnosis. In comparing the two sides the statement that the back is better than the front does not correspond with my observations. I understand perfectly well that we can get clearer sounds over the lower lobe of the lungs than elsewhere, but in comparing the two sides, in the majority of cases, you can get better results in front than posteriorly. You can count more upon the changes heard from in front. There is a disparity between the two sides in 50 per cent. of the cases. While the paper directs proper attention to the early signs, we should be especially careful that these early signs are not confounded with other signs which have nothing to do with tuberculosis. I see a large number of patients sent to me by other physicians where there has been an error in diagnosis in pronouncing the case one of tuberculosis. I have seen many lamentable cases where the patients have been told that they had tuberculosis and they were made miserable for life and driven to an early grave. I have in mind now two ladies, occupying high positions in society, who were condemned to die with tuberculosis; in neither case was there any tuberculosis.

A sign not spoken of in the paper seems to me to be of greater importance every year, and that is the pulse. A rapid pulse of 115 to 120 in a person otherwise well points pretty positively to tuberculosis. Bronchial breathing is practically found in all patients suffering from pleurisy, over the effusion, but not as continuously as over solid lung. In the text-books the voice sounds are represented as being present over the fluid. In not one out of fifty will you be able to get voice sounds over the fluid.

Dr. JAMES TYSON of Philadelphia—Dr. Bridge struck the keynote in speaking of pleurisy with effusion in the fact of diminished fremitus, which always means pleurisy with effusion. There is, however, one exception, which occurs in children with a purulent effusion as contrasted with serous effusion; sometimes there is an increase of fremitus. This is said to be the case, although I have never realized that such was so.

Dr. C. E. EDSON of Denver—I want to add to the remark made by Dr. Tyson in regard to the rapidity of the pulse not only occurring in advanced cases, but in the incipient ones; the rapidity of the pulse is a sign which has made me very suspicious in many cases. It is not only the rapid pulse which makes me suspicious, but also the irritable pulse. It is the nervous irritable pulse of small caliber that makes me suspicious of the early stages. This is not only a diagnostic sign, but one of certain prognostic importance, particularly in cases in this high altitude. It is a pulse which does not slow down in a reasonable space of time. If the pulse continues to be irritable the cases do not do well in the long run.

Dr. BEGGS, of Denver—The paper is an extremely important one, especially to the younger members of our profession. I remember one statement made ten years ago by Dr. Glascow, of St. Louis, Mo., which has always impressed me; it was that no man was capable of diagnosing incipient phthisis until he had examined one thousand chest cases. What he meant was, the diagnosis of the early cases. This diagnosis depends upon the alterations in the quality, and this is extremely hard for students—yes, medical men, too—to learn to recognize in the early stages. I have found that statement to be true to a certain extent in my own experience. I am not sure of my own ability to make an early diagnosis, although I have been practicing thirteen years. In cases of incipient tuberculosis there is an inconstancy in the occurrence of vocal fremitus. I have found many cases which have practically the same anatomic conditions present, in which the character of the vocal fremitus and resonance varies; and, even in the same patient this varies from time to time just sufficient to make vocal resonance a matter of doubt. I also find that I must agree that the front of the chest is better for comparisons than the back.

As regards pleurisy, I have in mind a case of a child 14 years of age, in whom the right pleural cavity was nearly filled with a serous effusion, as was proven by puncture; in this case there was no bulging, and the measurement of the chest showed no difference between the two sides. And, so far as we could detect, there was no difference in volume in the two sides of the chest.

There is another sign which has given me more trouble than any other, which is mentioned in most text-books, and that is the *muscularis sussurus;* this has been to me a source of error in making diagnosis. This, too, is a sign that every student should have his attention called to.

Dr. BRIDGE—As I stated at the beginning of this paper, I intended to call attention to a few of the possibilities and likelihood of error in the diagnosis of chest diseases, particularly on the beginning of such diseases as phthisis. I should have made mention of the errors which might occur on account of the muscular action; this is a source of error and great trouble to young practitioners in listening to chests, where particular care should be taken to place the muscular fibres of the chest wall at rest. Here muscle tones are produced by contraction which would interfere with intra-thoracic tones if one be not careful.

It is possible that I did not make myself sufficiently well understood in speaking of comparing the two sides of the chest. In the beginning of phthisis at the apex, I have been better satisfied with an examination made from in front of the chest. Slight fibrosis begins above and extends downward, and frequently this fibrosis has so far extended as to interfere with the accuracy of this examination when made from in front. Then, too, you do not have confused condition of the heart sounds as in front. If you find that there is evidence of fibrosis extending below the fissure between the two lobes of the lung posteriorly, it is a very strong evidence that there is a lesion of considerable consequence existing above it. Another point I wish to emphasize is that the patient should be made to expire profoundly. I can mention many cases during the past two years where the diagnosis could not have been made of incipient phthisis without this fact being known.

In answer to Dr. Tyson I would simply say that I do not recall any instance where the tactile fremitus from the voice was greater over the accumulation of pus than over the opposite side.

I am amused at the statement made that one should examine one thousand cases of chest diseases before one is capable of distinguishing the slightest changes that occur in incipient phthisis. Practically that statement is true, though I do not believe that this is necessary.

ANEURYSM OF THE CONCAVITY OF THE TRANSVERSE ARCH, APPEARING EXTERNALLY AS A LARGE TUMOR IN THE REGION OF THE HEART.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. W. McLAUTHLIN, M.D., AND W. N. BEGGS, M.D.
DENVER, COLO.

Charles M., aged 52 years, musician, entered the Arapahoe County Hospital, Denver, March 9, 1898. His mother died of cancer, at the age of 70 years, and a sister of his mother died of phthisis. He had been given to dissipation, contracting syphilis when about 20 years old, and he was addicted to drink. He had contracted gonorrhea several times. During the last fifteen years he had had some rheumatism. He said his present trouble commenced four months before, with a bad cold acccompanied by a severe cough, at which time a swelling appeared in the left chest, which had gradually increased.

The tumor had been tender and attended by shooting pains, moderate in character and confined chiefly to the region of the swelling. About two months before entering the hospital he became short of breath and this had increased so that he could with difficulty move about. He had coughed considerably and expectorated freely. His appetite had continued good but he was inclined to diarrhea. He had lost about twenty pounds in weight during the four months. He had also had some difficulty in swallowing.

Physical examination.—Patient is of small stature and stoops. He appears apathetic and weak. His memory poor. He answers the same questions differently at different times. Scars, apparently syphilitic, are abundant on legs and back. A tumor, the size of two large fists, on the left side of the sternum, extends from the lower border of the second rib to

the upper border of the seventh rib, and laterally from the center of the sternum to the middle of the axillary region. The tumor is firm to touch, but pulsates distinctly under the fingers, more especially at the base. No distinct bruit is audible. The position of the heart can not be determined, although the sounds are distinctly audible in the interscapular region and throughout the right side. In the left axillary region, just below the tumor, a systolic murmur is audible; flatness exists over the whole chest. The respiratory sounds are feeble and fremitus is absent, except in the upper part near the spine, where the breathing is bronchial with coarse râles. The right side shows exaggerated respiration in spots, with moist râles, the last being more abundant in the lower back. There is some edema about the ankles and the eyelids show distinct puffiness. The pulse averaged about 90 per minute; respiration, 39. In the right radial artery pulsation is scarcely perceptible, in the left it is present but extremely weak. Pulsation in the carotids is apparently equal. There is no tracheal tugging. The right pupil is larger than the left, the latter being smaller than normal, accompanied by some ptosis. But convergent strabismus in the right eye, the patient claims, is of much longer standing than the tumor. Slight hoarseness is present. Urine analysis negative.

He became progressively weaker. His temperature varied from 96 to 100, being below normal more than half the time. The tumor continued to enlarge perceptibly in every direction. On March 26 it is noted as extending from the clavicle to within four inches of the lowest rib, and laterally from the posterior part of the left axillary space to a point two inches beyond the right border of the sternum. The surface measurements were, vertical ten inches, transverse thirteen inches.

Dr. E. J. Rogers, the attending surgeon, saw the patient in consultation soon after his admission. A number of other physicians, especially Drs. Eskridge, Whitney and Sewall, made careful examinations. Dr. Rogers, by the exploring needle, withdrew a small amount of straw-colored liquid from the left pleural cavity. It was not, however, deemed wise to withdraw a considerable amount of fluid, although doubtless present, as it would tend to interfere with the established resistance hitherto offered to the advance of the tumor in certain directions. About ten days before death a reddened appearance of the skin at the summit of the tumor was noticed, as if the skin were about to ulcerate. A day or two later blood began to appear at this place, the most of it clotting as it appeared on the surface. It continuously stained his clothes. On several occasions he had requested the loan of a knife from neighboring patients, and he was put under more careful watching, as a mild delirium became manifest.

Early on the morning of March 28 he became quite suddenly and extremely distressed for breath. He complained of severe pain but could not locate it. He received temporary relief from one-quarter grain of morphin, hypodermically; about six hours afterward he began struggling for breath, tearing at his throat and was unable to speak. He conveyed the idea to those around him that his throat was closing up. There was apparently spasm of the larynx. Respiration ceased about thirty minutes later.

Postmortem examination by W. N. Beggs, M.D., four hours after death. It is the body of a middle-aged, rather emaciated, man. Rigor mortis is established and livories are present in the dependent (posterior) parts not subject to pressure. The eyes are dulled. Projecting from the left thorax is a large, almost hemispheric tumor. It extends from the left anterior axillary line to one inch to the right of the sternum and from the clavicle to the seventh rib. It is rather moderately firm to pressure. Over the anterior surface, including the area of the nipple, the skin is eroded and covered with dried, clotted blood for an irregular ovoidal space two by one and one-half inches in dimensions. In dissecting away the skin over the tumor it was found that as this eroded area was approached the skin became progressively thinner, the subcutaneous tissue disappearing entirely and the cutis vera becoming so thin that, although great care was used, it was impossible to avoid invading the tumor itself. This having been done a very considerable amount of cruor was expelled and it was found that the tumor was saccular, communicating with the aorta. The eroded distal extremities of the second and third ribs extended into the cavity from the left and the fourth and fifth ribs were imbedded in the cavity, both being eroded, chiefly on the upper edges and under surfaces. The left edge of the sternum was eroded to a depth of about one-half inch, extending from the attachment of the second to the fourth ribs, the costal cartilages of which had entirely disappeared.

The pericardial cavity was entirely obliterated by adhesions of slight degree of firmness, not entirely recent, however. The heart, small, was turned to the right on its axis, the left ventricle turned toward the front. The heart muscle was pale, flabby, rather friable, and of a uniform, diffuse, slightly yellowish cast. Death had occurred in moderate diastole and all the cavities contained a slight amount of mixed blood clot. The valves were normal. The ascending and transverse portions of the arch of the aorta were considerably dilated and the inner surface was wrinkled and freely dotted with irregular, yellow, very slightly elevated patches (atheromatous). At the concavity of the arch, beginning one and one-eighth inches above the upper margin of the semilunar valves, was the opening of the aneurysmal sac. This was eight and one half inches in circumferance. The sac was directed first downward and forward, then forward and upward, compressing somewhat the left bronchus, although there were no traces of erosion therein. Externally to the bony thoracic wall, the wall of the aneurysmal sac seemed to be composed of the soft parts of the thoracic wall.

In the right pleural cavity there were numerous, firm, old adhesions throughout. The right lung presented no peculiarities except a slight amount of emphysema. The left pleural cavity contained one and one-half quarts of a clear amber-colored fluid. The left pleura was much thickened and opaque. The left lung was very much compressed and consolidated, and contained no air, portions of it sinking in water. On cut surface it was of bluish-gray color, mottled with very many rounded and triangular-shaped patches, slightly elevated above the cut surface, varying in color from gray to yellow and in consistency from moderately firm to almost semi-fluid, the latter being characteristic of the yellow patches.

The liver was of approximately normal size. The upper surface was granular and covered with numerous shallow, richly-stellate scars. On the cut surface it was slightly granular, with distinct lobular markings, mottled dark bluish-red and yellowish. The splenic capsule was much thickened and opaque, white in color. On the surface were a few shallow stellate scars. Otherwise the spleen and the other organs not mentioned presented no peculiarities of special interest here.

A peculiarity of this aneurysm is the location of the external tumor, the usual place being beneath the sternum, below the right or left clavicle or in the back. A review of several authorities has failed to disclose so large an aneurysm, similarly situated. In case No. 150 in Hayden's work, the aneurysmal tumor extended from the level of the second to the eighth dorsal vertebra, occupying the position of the left scapula, which was displaced backward and outward. It was hemispheric and measured nine inches in the transverse and fourteen in the vertical diameter.

Differential diagnosis.—What were the signs and symptoms during life favoring the diagnosis of aneurysm and what other diseases should have been considered? The age of the patient, the history, the signs of syphilis, together with a pulsating tumor of the chest and pressure symptoms would certainly strongly suggest thoracic aneurysm. Yet the pulsation was nowhere strong, although toward the base a forcible and expansile pulsation was felt. Da Costa's most emphatic sign, viz., the presence of "two points of pulsation in the chest, two hearts apparently, each with its own distinct beat, its own distinct sounds," was absent, as the tumor included the ordinary cardiac area and the real location of the heart was not ascertainable. The absence of a thrill and of a murmur from the tumor is more corroborative than essential to the diagnosis, according to most authors, the number and solidity of clots in the tumor causing the variations in the signs to be derived from auscultation.

A pulsating empyema is said by all authorities to occasionally simulate aneurysm, especially when a pulsating tumor is situated in the region of the heart. In the case reported, physical signs of fluid in the left chest were present, viz., flatness, with absence of respiratory sounds and lack of fremitus. The tumor in this case was, however, enormously large for an empyema pointing externally. Moreover, the tumor was firmer and the pulsation more expansile than

would be expected in empyema; neither was the pulsation disseminated over the chest; unmistakable pressure signs were also present. The needle showed the fluid in the chest to be non-purulent.

The following case of pulsating empyema is reported in Stokes' work on the "Heart and Aorta":

The heart was displaced far to the right. "Each stroke of the misplaced heart produced the most extraordinary diastolic pulsation of the whole left side. The bed was shaken at each beat of the heart, and the patient's sleep interrupted by the vast and violent throbbing of the side; yet the force of the heart did not seem much augmented. There was no appearance of any external pointing of the contents of the sac."

Solid tumors of the chest.—Sarcoma, lymphomata and lymphadenomata are infrequent and tend to grow inward rather than outward. Cancerous growths are more frequent. If such a growth projects externally and pulsates, the symptoms and signs may simulate an aneurysm with rather firm clots. The expansile force is usually, however, much less distinct. The adjacent glands of the axilla and neck are often enlarged. The veins on the side of the thorax affected are more apt to be distended and especially, according to Hayden, varicose. The amount and character of pain is unreliable as a differential symptom. It should be noted in passing, however, that the degree of pain in this case was far less than would be expected in either an aneurysm or a solid tumor as large as the one under consideration. It is possible that he may have previously had more pain, but failed to recall the fact owing to the weak condition of his mind. It is more likely that pain was not prominent on account of the pressure of the tumor being outward rather than inward. The general health is usually poorer in cancer. In this case the general health was poor, hut the other conditions could account for it. Osler and other excellent authorities speak highly of the diagnostic value, in aneurysm, of tracheal tugging, first mentioned by Oliver. On the other hand, Wood and Fitz state that Grimsdale considers the sign of little positive value, "since he found it in 16 per cent of a number of persons free from aneurysm and examined with reference to its presence."

Mediastinal abscess.—The size and location of the tumor, the character of pulsation, the degree of pressure symptoms and the character of the temperature would all tend against this as a probable diagnosis. Nevertheless, although there was a general expectation to find an aortic aneurysm at the postmortem, that expectation fell considerably short of being a conviction in the minds of those who had examined this patient the most carefully. The fluid in the pleural cavity, being clear, thin and non-fibrous, was probably due to pressure. Osler speaks of aneurysm from the lower or posterior wall of the arch compressing a bronchus, thereby producing bronchorrhea, gradual bronchiectasy and suppuration in the lung—a process which by no means infrequently causes death in aneurysm, and a condition termed at the Montreal General Hospital "aneurysmal phthisis."

Pepper speaks of an irregular type of fever in such cases, as occurred in the case here reported, and that chills and sweats may occur, more strikingly showing a septic process.

Lebert, who analyzed a large number of cases, found that the average duration of life after the first distinct symptoms of thoracic aneurysm was from fifteen to eighteen months. A number of cases, however, are on record where life was prolonged for several years, and in a few for even ten years after an external tumor had appeared. In Hayden's analysis of sixty-eight cases, death occurred from rupture of the aneurysm in twenty-six instances. In only one of these twenty-six was the rupture external. Nine of the sixty-eight cases died from asphyxia. In the case reported here death would probably have occurred in a very short time from external rupture.

In reviewing this subject one is struck with the fact that hemorrhage from aortic aneurysm is far from being always fatal. Slow oozing or even quite severe and repeated hemorrhages, if there are intervals in which to recover from the immediate shock, may extend over a considerable time. Osler reports a patient who had "several brisk hemorrhages and who died four years after, having in the meanwhile enjoyed average health." Where there is an external tumor signs are apparent before rupture occurs. Stokes relates the following case, in which there was an external tumor in the lower sternal region which had caused absorption of the bone. There had been discoloration of the skin, followed by signs of sloughing, "so as to display what seemed to be the outer surface of the coagulum of the aneurysm. At each systole of the heart this coagulum moved outward, so as to close up the orifice in the skin and then receded during the diastole. After some days the coagulum gave way and a deluge of blood poured out. Immediate death would have followed but for the presence of mind of the nurse, who, on the instant, snatched up a cotton apron and stuffed a portion of it into the opening of the chest." The patient lived many days in good health and spirits, his life, so Stokes says, "depending on the precarious support of a plug of cotton rag which at every stroke of the heart appeared on the point of being forced out of its situation. The result was of course fatal."

Osler says that spontaneous cure is not very infrequent in small sacculated aneurysms of the ascending aorta. In many of these cases, the disease has been unsuspected during life and the obliterated sac found accidentally at the postmortem. Wood and Fitz state that aneurysms of the arch of the aorta "are always a source of danger and usually prove fatal, although they may exist for years. Their progress may be checked for a long time by the formation of thrombi, but the process of repair is always incomplete, and it is doubtful if any true aneurysm of the arch large enough to produce symptoms has ever been healed."

Abut ten years ago a patient died at the County Hospital here whose physical examination gave dulness over a portion of the chest, which, together with other signs which have escaped my memory, could not be satisfactorily explained. At the autopsy we were surprised to find the remains of thoracic aneurysm, the laminæ of organized fibrin showing beautifully.

THE PATHOLOGIC ANALOGY OF BRIGHT'S DISEASE AND SYPHILIS.

BY W. H. WHITEHEAD, M.D.

ATLANTA, GA.

First having my attention called to the efficacy of specific treatment in a case of albuminuria, in which I gave the mixed treatment of potassium iodid and

mercury bichlorid for specific trouble, I was greatly surprised to see the albumin disappear, instead of its being increased by the supposed irritant properties of the iodid (as I had been taught it was "hard" on the kidneys), and was led to make a series of experiments in an effort to discover the modus operandi of this mixture, and whether it was the iodid or the mercury that produced the result, also, was the remedy only applicable to specific kidney lesion, or was it a remedy for the condition which we know as Bright's disease, but which I prefer to call arterio-sclerosis renal, as this term conveys some idea of the pathology of the condition.

Some years ago I was resident physician to a famous lithia springs, the waters of which are highly extolled for "all kidney and bladder affections." This modest claim brought many sufferers to "Mecca." Some were benefited remarkably, but I saw no authentic cure of Bright's, though many were greatly benefited in health, feelings, etc., and the albumin diminished notably. This was due to the large dilution of the urine, the increase in volume, and consequent removal of a larger per cent. of deleterious matter.

While at the springs I also had many syphilitics under my care, and to one of these cases is due the present series of experiments I have made, and am making, in regard to the treatment of albuminuria with antisyphilitic remedies, mercury and the iodids. The case that first claimed my attention was one of chronic syphilis, fifteen years after the initial lesion, and was then suffering from intense pains in both tibiæ, and orbital pains. These pains came on at sundown, lasted all night and went away early in the morning, leaving the patient exhausted from suffering and terrific night sweats. It was a sad prospect, and to add to the dilemma, his urine was "loaded" with albumin. I made no quantitative test, but upon boiling in a test tube, the urine became gelatinous. The patient had been to Hot Springs, Ark., twice, with some relief each time, but soon relapsed. The physicians there told him his trouble was not specific but malarial, and gave him arsenic, iron, quinin, *et al.* He also took some baths and "rubbed some mercury" while at Hot Springs. I do not remember now whether he was instructed to do this by his physician, or whether he did it to keep from appearing odd.

At this time I was passing through the stage of evolution professionally, best called the electric craze. I tortured this poor man for weeks by applying galvanic electricity to his exquisitely sore shins and frontal region. Usual result. Having my suspicions aroused by the nocturnal recurrence of the pains and previous history of syphilis, I told him I thought a trial of antisyphilitic remedies was warranted. He consented readily, but there was that albumin, and the old idea of potassium iodid being hard on the kidneys.

But something had to be done, as the resident physician is supposed to be equal to all emergencies, at least to the keeping of all comers as long as possible, so I gave the regulation mixture:

Potassium iodid.	℥ iiss	80	
Bichlorid mercury	gr. vi		72
Aqua qs. ad to make	℥ iv	130	

M. Sig.—20 drops t. i. d. in half a glass of sweet milk after meals. Increase as directed.

In this mixture he received about fifteen grains of potassium iodid and about one-sixteenth grain of bichlorid in each twenty drops. This dose was increased one drop daily until he was taking thirty-five drops three times a day, or about twenty-five grains of potassium and about one-ninth of a grain of bichlorid. At this time ptyalization caused the remedy to be suspended for a while, and on resuming it was given in fifteen drop doses t. i. d., increased as before. I will not dwell on the syphilitic feature of this case, as all such is ancient history. It is sufficient to say that all pains, night sweats, etc., disappeared within one month, and that under a continued and varied course of treatment extending over two years, he was thoroughly restored to health, gaining over sixty pounds in this time.

The only connection between all this, which happened years ago, and the present paper, is the above-mentioned albumin. Being solicitous on account of the fallacious idea believed to be medical knowledge, and having heard some one say, or read that some one did say, "iodid of potash was hard on the kidneys." I often spoke to others of the danger of giving large doses of iodid of potash on account of the kidneys, and they, like myself, said "yes, yes, it is very dangerous." All had heard or read the same fallacy, for it is a fallacy pure and simple. So, when I examined the urine of my patient, who had albumin, and whom I had put on the dangerous iodid, and found no increase of albumin, but on the contrary not near so much as I had found on the previous examination, I said, syphilitic albuminuria, gumma of the kidneys, fortunate thing, all syphilitic, will get well, and so he did; but I came near losing what I believe to be a grand truth. It passed me like a ship in the night. I thought the albuminuria was due to syphilitic disease of the kidneys, and hence the result. Today, I believe this the true and rational treatment for the condition we know as Bright's arterio-sclerosis renal. If the therapeutic test is worth anything, one of two things is true: Bright's disease is of syphilitic origin and demands syphilitic treatment, or the pathologic condition of arterio-sclerosis and cell infiltration that is present in both diseases demands the same remedies: witness the absorption of immense gumma, or the magic healing of old syphilitic rupia, to say nothing of the remote neuroses and circulatory lesions, even mental equilibrium being restored by specific treatment, when such conditions are truly due to syphilitic processes.

There is nothing strange or occult in the action of these drugs; it is simply the eliminating qualities of them. I do not know just how the thickened walls of the delicate arteriole and capillaries are absorbed, their elasticity and contractility restored, their circulatory functions renewed, and even the necrosed material absorbed or washed away by the renewed life current; but I know that this very thing is done when a syphilitic sore is healed, or a gumma is absorbed by the intelligent use of mercury and the iodids.

If then, we admit the striking similarity in the pathology of syphilis, and the disease process known as Bright's disease, why should we marvel if the same remedies are applicable to the same pathologic condition, even though etiologically different, which is not proven.

I have no table to submit, no ax to grind. I have applied this theory now in many cases of albuminuria, only one, the first, having any personal history of syphilis. In all of them the albumin is diminished or disappears altogether in from thirty to sixty days, recurring in some, to again disappear under the same treatment. In some it has not recurred at all after

lapse of years. I have used the proto-iodid in one case along with potassium iodid. Results the same. I have tried iodid alone and mercury alone. Either will diminish albumin, but the best results are obtained by the mixed treatment.

I now submit the proposition to the profession and await the result.

GOLF FROM A NEUROLOGICAL VIEWPOINT.

Read at a meeting of the American Neurological Association in New York, May, 1898.

BY IRVING C. ROSSE, M.D.
WASHINGTON, D. C.

Long before the Columbian rediscovery of America our hardy Caledonian ancestry amused themselves by playing the royal and ancient game which has been defined as the putting of little balls into little holes with instruments very ill adapted to the purpose. In those days certain ascetic and lugubrious persons, like the sham-pious reformers of the present, who condemn as sinful anything that makes people feel happy, cried down golf, football and other so-called unprofitable sports, which were prohibited by decree, the legislative blight being a canon of the old Scotch parliament against golf.

Being difficult to extinguish strong instincts, people gave no heed to such prohibitions against the natural and wholesome promptings of the play impulse and manly pastimes of a vigorous race, and today we find a game with a long pedigree taken up and assimilated from Scotland, and so fascinating as to have spread around the English-speaking world.

Instead of dividing mankind, as some mathematicians do, into two classes, namely, those who have read analytical geometry and those who have not, it is now more appropriate to say those who play golf and those who do not, or as an enthusiastic devotee to golf might put it, those who are long drivers and those who are not.

What was yesterday the fad of a few has today become the practice of many sorts and conditions of men, who find in the exhilarating game of golf (which experts prefer to call a *study*) a means of hygiene and sport of inestimable value.

A short time since, in a paper prepared for this Association "On the Conservative Value of the Play Impulse," I endeavored to point out the individual and phylogenic good brought about by the exercise of the manly sports and amusements that brought together men and women of the leisure class at such places as the tennis court, the hunt, the meet, the golf links. Since then the game of St. Andrews in Fifeshire has encircled the earth, like the world-invading Campbells, and the descendants of a race to which piper Findlater belongs take their amusement seriously at sea-side links or on grassy moorlands at a game than which none is a severer test of nerve and none requires more stupid, dogged patience and harder work.

Any golf player familiar with the niblick shot out of sand in front of a bunker cliff will, I am sure, recognize the cool judgment and prompt action required by a successful player who makes a good drive and avoids or extricates himself from awkward hazards, as well as the many advantages entailed thereby in the way of invigorating and healthy employment of the highest bodily activities.

Doubtless from the sportman's point of view and that of the hygienist, the value of golf is quite apparent, but its therapeutic value, not so well established, is practically an untrodden field and in need of an exponent.

In the capacity of physician and neurologist it is impossible to familiarize one's self with the facts of the game in this relation without seeing its many advantages and acknowledging merits beyond all praise.

To the neurologist, who trusts to psychic, mechanical and hygienic influences rather than to drugs for treatment, the theme is replete with magnificent possibilities of prophylaxis and even of therapeutics. We have a royal road to physical exhilaration in a game that can be played all the year round, independent of atmospheric vicissitudes, during all the seven ages of man, by delicate young girls as well as by strong athletes, and even by decrepit old men, whose declining powers do not admit of severe exertion. It combines exercise, pleasure and fresh air without the risk of injury to heart, lungs or nervous system of some other exercises in which there is high blood pressure and arterial tension. To be more specific, there is absolutely no danger attached to the game, and consequently no accidents ensue. Unlike the bicycle, it is doubtful whether such a thing as an accident insurance was ever paid for injury incurred at golf. Nor is the game contraindicated in heart lesions, arterial calcification, albuminuria, old age, childhood and certain hysterical conditions which would be aggravated by such exercise as bicycling, swimming, horseback riding, or by mountain climbing.

To be more explicit, I may say that in all affections marked by slowing of oxidation, or in those consequent upon intoxication by the products of organic disassimilation, the game of golf is to be recommended as the best adjuvant method of bringing about a cure.

The obesity and degeneration of middle age, when the biceps has diminished and one's energy is wanting, may be helped by devotion to golf. The further tendency of the exercise is to eliminate the so-called diatheses and thus do away with gout, lithemia, headache and dyspepsia; while its hygienic and therapeutic consequences are admissible in cardiac and pulmonary affections. Although moderation is advisable in such circumstances, there can be no doubt of the benefit derived in some cases of cough, nervous asthma, and in affections of the bladder and prostate.

But it is pre-eminently in functional nervous disease that our great Anglo-Saxon game is to be recommended, both as prophylactic and curative. No exercise or recreation is better for the mentally overworked, the hysterical, the melancholic; none helps to preserve the concerted action of eye, brain, and muscle known as the psychological moment; none, perhaps, with the exception of swimming, gives one so good an appetite; there is not a more sovereign remedy for dyspepsia, and as to insomnia, such a thing scarcely exists among the devotees of golf.

Improvement in appetite and digestion has come under the notice of nearly every one connected with a golf club. Only two years ago the breezy air of the Newport golf-green caused such an improvement in this respect that the members of the club discharged a French for a negro cook, whose dishes were considered more wholesome and better suited to a golfer's appetite.

In addition to the unconscious vigor of body and

mind imparted by golf, the social amenities arising therefrom are of unquestionable therapeutic value, since the genial influences of the game, by expanding the ideas, tend to promote the good fellowship that comes from diversion and sensuous amusement, and by oiling the wheels of life, so to speak, makes them go on with rattling glee. In these days of excessive drive, competition and over-pressure, when undue waste of vital energy shows itself to the clinician in the way of various neuropathic conditions and decayed nerve elements, the problem of averting or mitigating such mischief comes to us with much seriousness. An obvious help in the solution is the encouragement of all innocent sports and recreations as a compensating factor in the phenomena of life. The condition applicable to the greater number is partly met by the present "boom" in a game that accurately reflects and expresses a great race and falls in with the spirit of our age of haste and subjectivity.

If there be one innocent recreation adapted more than another to all sorts and conditions, but more especially to the gloaming of life, when the mind needs an alterative, that healthful tendency is to be found in the national game of Scotland.

MEDICO-INSURANCE.

Presented to Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY S. T. McDERMITH, M.D.
DENVER, COLO.

Briefly as possible I will venture a few suggestions along lines that point to a domain unexplored by this Association, or at least unoccupied by this body. It is a virgin field, inviting the cultivating touch of the medical husbandman; an undeveloped province awaiting conquest.

For fifty years the profession of this country has had vague cognizance of the existence of such an Eldorado, but has never braved the wilderness, the tropics or the desert, to reach it.

The populace of this country had a vague knowledge of the Philippine Islands; that much of our hemp and palm leaf fans and manila wrappers for cigars were imported from there; but not until the echoes of Dewey's guns and the dull thud of a Spanish fleet striking the bottom of Manila bay and startling from its lethargy a civilized world, was any interest manifested in those tropical isles so rich in natural resources.

So I say for years the profession has, in a desultory way, and incidentally, had to do with Medico-Insurance, but no influence has been sufficiently exerted to arouse it to an appreciation of this rich isle in the Medical Pacific; rich in subjects for study and rich in results.

The writer, mindful of the couplet that

"Fools rush in
Where angels fear to tread,"

has no expectation that this shot will electrify a profession, an association, or section, and start it charging to encompass the goal, but he hopes that it may modestly contribute to forces whose captains and commanders yet to be chosen may ring the changes and fire the ordnance, the echoes of which may be heard to the uttermost confines of this Association's domain.

When you stop to consider that the personality and skill of the physician are important factors in commercial transactions involving billions of dollars, as the combined life insurance bodies now do, providing a source of income to the profession, of millions of dollars annually, is it not amazing that this Association, the most important and authoritative organization of medical men on this continent, has given the subject no recognition? Is it not astonishing that the insurance interests have not ere this demanded recognition?

It has ever been taken for granted that a physician, any physician of recognized good standing, was fully competent to prosecute an examination for life insurance.

Prior to the advent of specialties in medicine, it was likewise assumed that the general practitioner, the only kind of practitioner then known, was quite competent to diagnose and treat diseases of the female organs, genito-urinary or skin affections, ophthalmic and aural ailments, equally with fevers and all other systemic derangements.

If any logic will justify specialties in medical practice, it will equally sustain the demand for special study as a requisite to competent work in the field of medico-insurance.

However well equipped a medical man may be for encountering the host of destroyers in the open field of pathology, without self or other training for medico-insurance, he is incapable for estimating the factors which go to make up the rating in a given case. And the lack of familiarity in this operates to render his examinations and report thereon indifferent, or of doubtful value.

The whole scheme of life insurance is based, not on certainties, but on probabilities, yet it is the business of the actuary with the essential aid of the examining staff to eliminate all of chance that it is possible to eliminate, by adding pillars of strength to the structure's foundation, and this consists in the judicious selection of life risks, and the responsibility for such selection rests almost wholly with the medical examiner; and how, without special study fitting him for the work, can an examiner meet that responsibility and render a service consonant with the demands of the service?

To attempt to enumerate, much less discuss the subjects for study which naturally group themselves under the general heading of medico-insurance, would extend this paper to unreasonable limits. A few examples are alone sufficient to suggest the broad field that is open to those who would till it. But I insist that this Association should be the gateway to that field.

First. "Appendicitis as a factor in insurance."

Second. "Consumption from an insurance standpoint."

Third. "Cancer and its relation to insurance."

Fourth. "Syphilis, its bearing on life risks."

These, with hosts of other sub-titles entering into personal or family history, together with the weight of the applicant in relation to height, the occupation, habits, environments, etc., are subjects for chapters and volumes, which should vitally concern any one essaying the important rôle of medical examiner.

The British Medical Association has inaugurated a Section devoted to this special study, the first session having been held last week at the meeting of the

Association in Edinburgh. The Section is there given equal recognition with Medicine, Surgery, Ophthalmology, or any other recognized branch of the profession.

Insurance medicine has therefore, in a sense, been legalized as a specialty by a scientific body which easily stands at the head in the civilized world. It would be appropriate for this Association to early follow the example.

That there is a demand for opportunities to cultivate and develop this important field, and that there is an awakening along these lines, it only need be mentioned that special, independent associations have been formed, as "The Association of Medical Directors." an organization of Medical Directors of old line companies, "The Chicago Association of Medical Examiners," "The Pacific Coast Examiner's Association," and other independent societies, besides the Sections in the Fraternal Congress and the Mutual Life Underwriters' Association, devoted to the subject. I am informed, too, that special courses on insurance have been provided in a few centers of medical tutelage, in the University of Yale and the Vanderbilt University, and perhaps others.

So, since the growing need of a wider dissemination of medico-insurance knowledge is so apparent, I would venture to suggest that its recognition and fostering through the medium of either a separate Section or as a sub-division of the Section on Practice of Medicine would be a move in harmony with progress, in keeping with the needs of the profession, and would comport with the objects and dignity of this, the largest and most august Medical Society in the land.

SURGERY OF THE LUNG.

The Oration in Surgery Delivered at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Col., June 7-10, 1898.

BY J. B. MURPHY, M.D.
CHICAGO, ILL.

(*Continued from page 216.*)

INFECTIVE LESIONS OF THE LUNG WHICH CONCERN THE SURGEON.

The surgical infective lesions of the lung are abscess, bronchiectasis, gangrene, foreign bodies, cysts (echinococcus and dermoids), tuberculosis and actinomycosis. Abscess of the lung is not as common a pulmonary affection as might be inferred from the number of cases reported as such in the literature. A careful scrutiny shows that a considerable percentage of the cases reported as abscesses are empyema communicating with the bronchus, subdiaphragmatic abscess rupturing into a bronchus, or circumscribed interlobar pleurisies.

Abscess—Etiology.—The most common cause of abscess of the lung is: 1, acute circumscribed inflammation, as pneumonia, followed by necrosis and softening of the lung, 46 per cent.; 2, peribronchitis; 3, septic embolism of the pulmonary artery, or a single branch of the bronchial (pyemic embolism), 3 per cent.;[1] 4, rapid tuberculary caseation and necrosis, with secondary infection; 5, perforation of the lung by infection from malignant diseases of the esophagus and mediastinum; 6, subphrenic perforations into the lung with retention; 7, foreign bodies in the bronchi 11 per cent. (Tuffier); 8, infections following injuries; 9, suppurative inflammation around calcareous deposits, the latter either a sequence or a cause of the suppuration. From the above it will be seen that the pathology of abscess of the lung is as varied as its etiologic factors. Its clinical course, its treatment and its termination will vary with its etiology; what then concerns us most as surgeons is its diagnosis and treatment.

Symptoms.—The symptoms will vary also with the etiology; take, for example, an abscess following pneumonia. The case runs the ordinary course of a pneumonia; there is nothing special to indicate the probable necrosis and suppuration of the lung during the course of the disease till the time for resolution has presented itself; when the time has arrived for the cessation of fever, cyanosis, delirium and toxic symptoms the sudden change so characteristic of pneumonia does not take place. The fever continues with more marked morning remission and evening elevation. The hectic flush and sweats are more pronounced; the tongue remains dry, coated and cracked; in other words, the symptoms of pus infection have supplanted the symptoms of pneumonia. In some cases there is a sudden expectoration of a large quantity of pus in which may be found lung tissue and various micro-organisms, as pneumo-, strepto- and staphylococci, bacillus communis coli, etc. The expectoration is most frequently fetid, though not necessarily so. This fact aids materially in making a diagnosis. If the abscess be caused by a septic embolus, by a foreign body, perforation of the esophagus, etc., the history will vary from the above. Where it is produced by the suppuration of a cyst, as a hydatid the characteristics (hooklets) will be present; again, when a dermoid in the chest cavity suppurates and opens through a bronchus there will be found sebaceous material, hair or even teeth in the expectoration. (Ogle-Godlee.)

Physical signs and diagnosis.—The physical signs will vary with the size, location, presence or absence of bronchial communications and etiology; the presence of dulness, the absence of respiratory sound, absence of cavernous breathing, the diminished vocal fremitus, the absence of intercostal movement in respiration, the stationary area of dulness, lead to the belief that there is an accumulation of fluid: a differential diagnosis must then be made between cysts, pleuritic effusion, gangrene, abscess, and consolidation. Inspection shows a marked loss of respiratory movement and occasionally signs of edema where the abscess is situated close to the chest wall. If it be deep in the lung the respiratory movements may not be interfered with. Percussion where the abscess does not communicate with a bronchus reveals a circumscribed dulness. If the abscess communicates with a bronchus we may get a cracked-pot sound, or the dulness may be the same as if non-communicative if the cavity is kept constantly full of pus. Great care should be taken in making comparison between the deep and superficial percussion notes to determine if lung tissue intervenes between the abscess and the chest wall; the area of deep and superficial dulness should be carefully outlined on the chest surface.

In auscultation the sounds will vary, depending upon the presence or absence of bronchial communication. There may be a superficial respiratory murmur with a deep abscess. The vocal fremitus is diminished. If the abscess be large, distant bronchial breathing can often be detected. When bronchial

[1] Porter: Jour. Amer. Med. Association, March 9, 1891.

communications exist we have the amphoric breathing, often the distinct metallic tinkle, the whisper sounds and the gurgling. In pulmonary abscess and bronchiectatic cavities the stethoscopic examination is liable to be misleading as to their location, they often appear to be situated farther from the hilum than they are in reality. In my experience this was not true, as the percussion and auscultation revealed the location when the cavity was situated in the anterior portion of the lung.

Exploratory puncture has been considered the crucial test, although authors differ widely as to its value and significance as a negative manifestation. E. Bull considered it of only moderate value; still he insists that it should always be used where drainage is indicated. He attributes its deficiencies, 1, to failure in proper location of abscess by other physical signs and therefore not reached by needle; 2, to a plugging of the needle before the cavity is reached, and 3, to abscess contents being too viscid to pass through the needle. Tuffier says exploratory puncture is permissible but often deceptive, and when negative the puncture is to be made many times. In his cases he made from two to twelve punctures in each case and found with this large number of efforts he failed to locate the cavity in 17 per cent. of the cases of gangrene, 17 per cent. of the abscesses and 33 per cent. of the bronchiectases. He further states that puncture is harmless when done at the time of operation, but at other times may be dangerous; it is deceptive, as it does not show the multiplicity of the lesions. He found in twenty-eight cases that the primary exploratory puncture produced positive results in sixteen, multiple punctures added seven positive results to the number, and in five the result was negative. Foul gas in the syringe is just as positive, from a diagnostic standpoint, as pus. Bushnell favors repeated punctures for localization.

The dangers of exploratory puncture are: 1. Hemorrhage. In recalling our anatomy we are reminded that a blood vessel accompanies each of the bronchi; these are likely to be punctured in exploration, give blood in the hypodermic, and may be followed by fatal hemorrhage; a case is reported by Fraentzel. In two of my cases of bronchiectasis there was considerable blood expectorated after puncture, but not sufficient to cause alarm. 2. Infection of pleura. The literature supplies a number of cases in which the pleura became infected following exploratory puncture, either from the escape of pus through the puncture canal, or from an advancement of the process along the canal into the pleura subsequently, producing an infective pleuritis. 3. Gangrene. A gangrene along the line of puncture involving the external chest wall has followed exploratory puncture, therefore exploratory puncture is not as harmless even in pleuritic adhesions as might be believed. 4. Pneumothorax. This has proved to be a serious complication following exploratory puncture only when accompanied by infection. I am convinced that exploratory puncture in the surgery of the chest, for diagnostic purposes, will not become a common procedure except for localization at time of operation.

Location of the abscess.—The abscess may be situated in any portion of the lung. Tuffier found it in the lower lobe in 80 per cent. of the cases and most frequently in the posterior portion of that lobe. With the aid of the radiograph we are able to determine if the abscess be close to the anterior or posterior wall of the chest, as can be seen from radiograph of Miss K.

Treatment.—After the diagnosis has been determined, should the treatment be palliative (therapeutic pneumothorax, puncture with trocar or aspiration) or surgical (resection of chest wall with compression of lung over abscess, incision with drainage)? That will depend somewhat on the etiology and location of the abscess, but more particularly upon its size. Should there be an absence of adhesion and the lung collapse when the pleura is opened, and if the abscess communicates with a bronchus, it would seem from a theoretical standpoint that it should drain and close. Thoracotomy in this manner is so easily performed that it appears to me applicable in the class of cases in which pneumotomy is most dangerous, *i. e.*, where there is an absence of adhesions. It allows of, *a*, drainage through the bronchus; *b*, contraction of the cicatricial abscess wall; *c*, peripneumonic compression from the air in the pleural cavity. All of these should favor the repair of the abscess. We know from the results following operations for pyo- and hydrothorax that the lung after a long period of compression, re-expands and functionates; this point is most forcibly illustrated by the cases of Delagéniere. If pleuritic adhesions exist there can not be a general collapse of the lung; it would only be partial.

Puncture and aspiration as treatment for abscess of the lung has rapidly fallen into disuse. William Koch favored this procedure, as he feared pneumotomy. The treatment of suppurating cavities by means of aspiration in most positions in the body has been very unsatisfactory, and abscess of the lung is no exception to the general rule. The trocar and permanent canula have been advised and used in cases with adhesions, and particularly advocated when adhesions did not exist; the canula was intended to conduct the septic material across the pleural cavity to the opening in the chest wall. Dr. E. Fletcher Ingals[44] reports three cases treated by aspiration alone; all recovered. He states the diagnosis of abscess was not confirmed by microscopic examination and might have been circumscribed or interlobar pleurisy. Dr. McArthur, in discussing Dr. Ingals' paper, advocated operation with packing of pleura with gauze to protect the pleura when adhesions were absent. T. Anderson[45] successfully operated a case by first introducing a trocar, waiting two days and then dilating with artery forceps; there was no hemorrhage. Cummins[46] did a similar operation with recovery.

It would seem far preferable in these cases to make a large free opening in the chest by resection of the sixth, seventh and eighth ribs, pack gauze around the infected area, open the lung cavity and freely drain the costo-diaphragmatic cul-de-sac, as advised by Delagéniere for empyema.

The canula and trocar have been used with indifferent success in the treatment of pulmonary abscesses; while its inefficiency has not been so pronounced in abscess as in gangrene, the records show that it is far from satisfactory and not free from danger; in many cases secondary thoracotomy and pneumotomy had to be performed. A case forcibly illustrating this point is reported by J. Eustace Webb,[47] where an apparently perfect drainage through the

[44] Jour. Am. Med. Association, Vol. xxviii, 1896, p. 397.
[45] Am. Prac. and News, Louisville, 1890, N. S. X., 10-12.
[46] British Medical Jour., 1889, Vol. i, p. 269.

canula ceased after six weeks; a few weeks later a pleurotomy had to be performed on the anterior side; patient recovered. H. Havelock Davies reports a successful case with the canula and trocar treatment.[48]

Bull, in 1884, urged that all abscesses should have artificial fistulæ established; that all cavities should be drained to prevent secondary results. He realized the difficulty of estimating the size of the cavity and differentiating between one large cavity and multiple closely allied small ones. He considered that tuberculosis was a positive contraindication to the establishment of drainage.

By an external physical examination we are unable in the great majority of cases to determine the presence or absence of adhesions. Occasionally a friction sound will be heard, which will indicate that there are no adhesions at that point. I have demonstrated that the absence of adhesions can be positively diagnosed. By introducing an exploring syringe trocar through the skin into the intercostal muscles; the stilette is then withdrawn and the trocar is connected with a filter bottle to which a bag of nitrogen gas or sterile air is attached; a slight pressure is placed on the reservoir and the trocar is pushed forward until the parietal pleura is penetrated; if adhesions do not exist the gas will suddenly commence to flow and the lung will collapse. On the other hand, if the lung be adherent, the trocar will traverse the parietal and visceral pleuræ and penetrate the lung and the gas will not flow. To illustrate:

Case 1.—Mr. K., clerk, age 24, Cook County Infirmary, admitted to hospital April 30. Suffering with tuberculosis of the right apex; physical signs extending down to the margin of the third rib in front; tubercle bacilli present. He was placed on the table and a puncture made with the trocar, as described above; when the parietal pleura was punctured the gas was seen to suddenly pass through the filter solution and soon the physical signs of pneumothorax presented themselves; 120 cubic inches were injected, proving absence of adhesions. The history of this case will be given in full in connection with the treatment of tuberculosis by defunctionalization.

Case 2.—E. L., male, age 34, Cook County Infirmary. Phthisis in second stage, with cavity in right upper lobe; the method was the same as was used in the preceding case; after the insertion of the trocar there was no escape of gas until the lung was deeply penetrated, then it passed freely and was detected in the upper air passages: there was no collapse of the lung; no inconvenience was produced by the injection, showing that adhesions existed.

Bull considered it was not necessary to a good result in opening abscesses that adhesions should be present; this is also shown by the case of Kroenlein. One of the indications given by him for success, was that the cavity must be near the surface, and if adhesions were not present a trocar should be used to conduct the pus out of the pleural cavity. He advised the use of caustics to produce adhesions. This, however, had been advised previously by Krimer in 1830. Péan, in 1861, suggested suture of the visceral and parietal pleuræ for the production of adhesions before opening the abscess cavity. Barry and Graux also advised this method. Godlee suggested puncture for the production of adhesions. Mosley favored salicylic acid. Quincke urged zinc chlorid for the same purpose; Krause, a tampon. Quincke made fifteen experiments for the establishment of adhesions by suture; his results showed the method a failure.[49] Tuffier found adhesions present in 87 per cent. of the septic cases.

Tuffier,[50] in his most excellent paper, considers that the dangers are great where adhesions do not exist and that opinion was based on his experience in eight cases in which complete pneumothorax occurred during the operation; in two death was immediate; one died a few hours after the operation; two recovered (suppurating foci not opened); one recovered (focus opened four months later), and one with immediate opening of focus. The first three of these results appear to be attributable rather to the character of the opening than to the presence of a pneumothorax. From a perusal of the most recent cases reported and from my experiments I feel convinced that adhesions are not necessary to success, and furthermore that their absence has advantages, as then the entire hand may be inserted into the chest for the palpation of the lung and location of abscesses; further, I am convinced that abscesses without adhesions, and with bronchial communications, should not be treated by incision and drainage through the chest wall, but by producing collapse of the lung by injecting nitrogen gas or a liquid into the pleural cavity, thus compressing the lung and allowing the connective tissue in the wall of the abscess to contract and obliterate the cavity with the aid of the bronchial drain.

Operation.—In abscesses of the lung the earlier the operation the better the prognosis (Sonnenberg). The incision in the chest wall should be the U or H shape which admits of an extensive resection and thorough exploration of the field in which the abscess is located. The ribs should be resected subperiosteally, if possible without opening the pleura. After the chest has been opened and adhesions found present, the location of the abscess must be determined; this may be accomplished with the exploring needle, with the scalpel, or, better still, by careful digital palpation. The lung may be pushed away from its parietal adhesions and a digital palpation made in every direction until the position of the abscess is determined, then the exploring needle may be used to confirm the diagnosis. The scalpel should be used to incise the lung and abscess wall. E. W. Andrews favors the scalpel, and successfully incised an abscess four inches below the surface of the lung and removed thirty-five grammes of calcareous material from the cavity. The hemorrhage is unpleasant but rarely dangerous, three serious cases having been reported, one by Quincke, and two fatalities, one each by Fabricant and Andrews. In the latter case no autopsy was permitted. The patient had several severe hemorrhages preceding the operation; it is presumable that the fatal hemorrhage was from the same source. The hemorrhage following the incision can be controlled by compression, or better, by accurate catgut suture. I found the latter more satisfactory in my experimental work. The scalpel is preferable to the cautery; it produces a clean incision; it allows of inspection of the tissues divided; it permits a view of the cavity when opened and a suture of the lung tissue for hemostasis if necessary; the cautery may be used on the incised surface to still the bleeding. There is, however, with incision some danger from air embolus of the pulmonary vein, as the blood here may have a minus or a very feeble plus pressure, and in deep inspiration the air is aspirated into the vein. Quinke reported a fatal case of this character. Reclus favors the Paquelin cautery for opening the abscess. If

[48] Lancet, London, June, 1895, p. 640.
[48] Lancet, London, Sept. 1, 1888.
[49] Med. Week., Paris, 1895, p. 505.
[50] Inter. Med. Cong., Moscow, 1897.

the lung recedes after the division of the pleura the opening should be rapidly enlarged and the hand or cyst forceps inserted to draw the lung out. It can be retained here by sutures to the parietal wall and packed around with iodoform gauze. The lung in this position admits of accurate palpation and if the tampons are properly placed there should be little risk in the immediate opening of the abscess. A large drain of soft pure rubber should be inserted and secured by suture to the lung and chest wall; or, better still, rolled gutta percha paper or gauze drain may be used. The rubber drain has been charged with being the immediate cause of hemorrhage from pressure necrosis of the vessel wall. (Walsham and Sutherland.)

The irrigation of pulmonary cavities is rapidly going into disuse; it produces unpleasant symptoms and in one case caused a fatal result—laryngo bronchitis—boric acid and thymol having been used. H. W. Austin [51] reports a case in which irrigation with bichlorid was used without producing unpleasant symptoms, although the patient almost drowned from rupture of the abscess into the bronchus during operation. Case recovered.

Experiment 1.—Nov. 1, 1897; black dog, weight about 30 lbs.; right side of chest was shaved and rendered aseptic by scrubbing with soap, ether, alcohol and bichlorid 1-1000; ether anesthesia; usual antiseptic precautions with instruments, ligatures, towels, lap sheets, hands, etc.; an incision 3 inches long, over and parallel to the second rib was made; resected three inches of the latter; the pleura was incised for two inches; immediate collapse of the lung was observed; the vibrations of the mediastinal septum were watched and it was noted that with each inspiration it vibrated farther to the left and with each expiration farther to the right; it became thinner and thinner until it was a mere film and looked as if it would rupture; the attenuation took place anterior to the mediastinal contents; the dog became cyanotic and finally ceased breathing; the chest walls were then compressed and the opening in the right side closed by the palm of the hand; when the chest expanded the dog began to breathe regularly and rapidly; his cyanosis quickly disappeared; when the hand was removed respiration would rapidly cease, when replaced it would go on as before; it appeared to make no difference whether the aperture were closed at the end of inspiration or expiration. The upper lobe was drawn out through the opening with the forceps; the apex was split with the scissors down $1\frac{1}{2}$ inches; the incision was closed by accurate continuous catgut suture; the lung was dropped back into the chest and the opening closed with a deep suture of muscle and fascia with catgut and a subcutaneous buried suture of the same material; the dog was not sick after the operation; as he absconded on the twelfth day I was unable to obtain the specimen, with which I wished to show the histology of repair of incision. The literature furnishes us many reports of repaired punctured and bullet wounds of the lung. The restoration is so perfect that it is often difficult or even impossible to locate the track of the missile from the pathologic evidence. I therefore did not repeat this simple experiment.

Prognosis.—Reclus reported 23 pneumotomies for abscess, with 20 recoveries and 3 deaths. J. Schwalbe* says that, of 50 per cent of the cases operated for acute and chronic gangrenous abscess recovered and 40 per cent. died. In chronic bronchiectatic and simple abscess only 16 per cent. recovered, 41 per cent. died. Of 43 cases collected by Tuffier there were 10 failures; in 7 per cent. of these the failure was due to inability to locate the abscess, from an inexact diagnosis or from the absence of adhesions. Fabricant reports 17 abscesses following pneumonia all operated, with 14 recoveries; 7 following infection, with five recoveries; 3 suppurating hydatids, all recovered; 2 gunshot wounds, both recovered; in all, 29 cases, with 24 recoveries. J. Blake White performed pneumotomy twice on the same patient at an interval of three months with success. Ramsay† reports four cases of pneumotomy. The ultimate results when the abscess has been opened and drained, are favorable, particularly in the acute abscesses following pneumonia: the subacute or chronic heal slowly with prolonged or permanent fistulæ. The earlier the operation the more certain and rapid the healing, as the wall is thinner, the cavity usually small and the reparative process more rapid. I have collected 71 cases of abscess of the lung; of these 49 completely recovered; 5 recovered with fistulæ; 16 died, 1 from the operation, 10 from undetermined causes, 3 from exhaustion, 1 from hemoptysis, 1 case was lost sight of.

Lung Abscesses from 1878 to 1897, years in rotation.

Case 1, 1878. Radsk, Centralblatt f. Chir., 1878, No. 44, p. 750. Male, aged 44 years. Two large abscesses in region of right mamma. Empyema necessitatis, with communication with right bronchus; located in region of right mammilla; incision and escape of one liter of pus; irrigation with carbolic acid, followed by rise of temperature. In next few hours there was improvement. Death in 29 hours. Necropsy: Large abscess cavity in lower lobe and fresh pleuritis on opposite side.

Case 2, 1879. Austin, Rep. of Super. Surg.-Gen. Marine-Hosp. Service, Vol. 17, 1879, p. 246. Male, aged 21 years. Empyema and abscess of lung; duration 3 months. Had a cough. Located in left side; abscess in upper lobe of left lung; abscess probably communicated with pleural cavity. Aspirated several times about 1 month before operation; aspiration showed a clear fluid at time of operation; puncture almost pus. Incision $1\frac{1}{2}$ inches long in axillary line between 9th and 10th ribs; rubber drainage tube inserted, 5 quarts of offensive pus escaped at once; 300 c.c., 1-4000 HgCl. solution irrigated. Recovery, with persistent fistula.

Case 3, 1879. Sedgwick, Lancet, March 29, 1879, p. 441. Abscess of lung. Typhus. Puncture twice at short intervals.

Case 4, 1882. Fime, Norsk Mag. for Hæger, 1882, No. 22, in Runeberg obs. 4. Female, aged 4 years. Abscess of lung. Duration 7 weeks. Acute lobar pneumonia upper left lobe. Location, apex of left lobe in front. Incision in 2d or 3d intercostal space; pneumotomy; Pus had mixed with air; drainage. Slow recovery.

Case 5, 1882. Lancet, 1882, Vol. 1, p. 601, Payne. Male, 23 years. Abscess that had been diagnosed as purulent pleurisy. Acute inflammatory affection of lung (pleurisy). Located at base; adhesions. Puncture, axillary line; positive result. Incision, pleurotomy (venous hemorrhage); drainage. Temporary improvement; patient died seven days after. Necropsy: No pleurisy; abscess of lung; report not very precise.

Case 6, 1882. Quiss, Wiener Med. Woch., No. 3, Vol. 3, 1882, p. 364. Male, middle aged. Abscess. Pneumonia; fluctuation on chest wall. Incision 1 cm. long in seventh interspace, large quantity of pus removed two hours after operation; great bleeding; gradual improvement. Dismissed in seven weeks cured.

Case 7, 1884. Rohden, Deut. Med. Woch., 1884, Vol. 14. Female, 20 years. Empyema and abscess of lung; duration two months. Left-sided pneumonia, on lower left side. Puncture at angle of sixth and eighth ribs, emptying 1100 c.c. of fetid pus. Thoracotomy on August 8; drainage and irrigation with salicylic acid sol.; fever diminishes and improvement sets in; on August 30 drain is removed, temperature now rises and patient becomes worse; the wound reopened, drain and finger introduced; abscess of lung is thus opened and pus escapes; continuous irrigation, improvement; after several months the fistula is healed.

Case 8, 1884. Pridgen Teale, Lancet, 1884, Vol. 2, p. 6. Male, 54 years. Pulmonary abscess cavity. Pleuro-pneumonia one month before. Location at base of right lung posteriorly; pleural adhesions. First puncture, serous liquid; second puncture, pus; two days after cavity punctured with trocar, fetid pus. Incision at right of puncture; pleural cavity contains no liquid; puncture of adherent lung yields pus; opening enlarged with finger, escape of two pints of pus; drainage, carbolized irrigation. Recovery; drain removed five months after. Patient seen three years after; some retraction of thorax and feeble respiratory excursion on right side; later patient had two operations with death.

Case 9, 1884, Waugh, quoted by Tabucaat. Male, 53 years. Abscess of lung; acute pneumonia of left lung. Resection in ninth intercostal space; profuse hemorrhage, checked by tamponade. Good and complete recovery.

Case 10, 1885. Broadlett, Med. Jour., May 31, 1884. Large cavity in lower left lobe, which was opened, followed by slight improvement. Cavity opened. Death.

Case 11, 1885. Andrews, Jour. of Am. Med. Assn., 1885, Vol. 5, p. 261-36. Male, 28 years. Abscess of lung. Located left side posteriorly. Signs of cavity. Puncture between fourth and fifth ribs, no result; second puncture in anterior chest wall, finds pus. Incision on needle, no rib resection; large amount of fetid pus escaped; irrigated with carbolic solution. Recovery rapid and complete.

Case 12, 1885. Korobein, 1885, quoted by Fabricant. Female, 11 years. Abscess of lung and empyema. Located in left lung. Positive puncture. Resection after eight days' drainage; after seven months wound made larger. Recovery.

Case 13, 1886. Bouilly, 1886, quoted by Fabricant. Male, 46 years. Cavity in upper right lung. Ecchinococcus removed 10 years ago by expectoration. Located in upper right lung; pleural adhesions. Resection of 6.7 cm. from third and fourth ribs; pneumo-cautery used. Recovery; left on eighteenth day.

Case 14, 1887. Hassen, Mamg. Disoeft. Kiel, 1886, et Berlin Woch., 1887, Obs. du Quincke, p. 138. Female. Old pulmonary abscess or bronciectasis. Duration twelve years. Pulmonary affection of undetermined nature; base of left lung. Signs of cavity; no adhesions. Exploratory puncture axillary line, negative; five injections of one-fourth or one-half tinct. of iodin; second puncture at same point yields a few drops of very fetid pus. Died three weeks after of purulent pleurisy.

Case 15, 1886. Rocket, 1886, Wid. Abscess. Resection. Recovery.

Case 16, 1886. Wiener Mer. Med. Presse, 1886, p. 1235. Male. Chronic abscess; base of right lung; pleural adhesions. Incision in sixth intercostal space; pneumotomy and drainage. Death eight days after, abscess communicating with abscess of liver.

[51] Marine Hosp. Rep., Washington, 1889, p. 246.
* Cent. f. Chir., vi. p. 171.
† Ann. Surgery, St. Louis, 1890, xi. p. 43.

Case 17, 1887. Quincke, loc. cit., p. 20 and 21. Obs. 2 at Berlin Klin. Woch., 1887, p. 357, et in hassen loc. cit. Male, 26 years. Chronic abscess; pneumonia two years before, base of left lung posteriorly. No signs of cavity; no adhesions. Incision: zinc cl. 2 paste, in ninth intercostal space, repeated several times; resection of 4 cm. of ninth rib; puncture incision with thermo-cautery; treatment lasted three months. Pus is voided by wound for three weeks after operation; recovery with fistula. Saw case twelve years after; has a fistula which secretes a little.

Case 18, 1887. Runeberg, Deut. Archiv. 3, Klin. Med., 1887, p. 91. Male, 33 years. Acute abscess; five weeks; chronic pneumonia; base of right lung beneath spine of scapula. No signs of cavity; adhesions; exploratory puncture. Resection of sixth rib on axillary line; incision of a superficial abscess; irrigation with carbolic and drainage. Recovery in two and a half months.

Case 19, 1887. Thiriar, Bull. Acad. de Med. de Belgique, 1887, No. 10. Male, 22 years. Pulmonary abscess, hemoptysis; base of left lung posteriorly; adhesions; two negative punctures. Resection of fifth, sixth and eighth ribs, large resection; horizontal incision extending from 15 cm. of axillary line to angle of vertebral column along eighth rib; a vertical incision 5 cm. from vertebral column; opening of cavity with thermo-cautery. Recovery.

Case 20, 1887. Zieluvitz, Deut. Med. Woch., 187, Vol. 13, p. 239. Male, 15 years. Empyema; abscess of lung found at operation for empyema. Morbid pneumonia, three months later an empyema was found; lower left lobe. Resection of sixth and seventh ribs, exudation cleaned out; irrigation; abscess cavity opened along fistulous tract through empyema, incision; opening tamponed with iodoform gauze; empyema cavity tamponed. Patient cured in eight weeks.

Case 77, 1887. Zieluvitz, Deut. Med. Woch., 1887, Vol. 13, p. 239. Male, 15 years. Empyema with abscess of lung; abscess of lung healed was found at operation for empyema; a few weeks before empyema was opened. Seventh rib resected at a second operation for the empyema; cavity was cleaned out; healed abscess cavity was discovered. Recovery complete in six weeks.

Case 21, 1888. H. N. Davis, London Lancet,, Vol. 2, 1888, p. 419. Male, 21 years. Abscess of lung. Duration from beginning of sickness, about three years. Subacute pneumonia of left side, a year later consolidation of right lung; right side. Signs of cavity. Positive puncture in fifth interspace; anterior axillary line. Incision, upper border of sixth rib; trocar and canula introduced, a quantity of fetid pus removed; cavity washed out twice daily with carbolized col. for three weeks. Recovery; one and one-half months after operation cavity was closed; patient completely recovered and well and at work five months after.

Case 22, 1888. Godley, Brit. Med. Jour., 1888, Vol. 2, p. 880. Abscess; no adhesions. Suture of the two pleuræ, pneumotomy. Death three days after from abscess of other lung.

Case 23, 1888. Quincke, loc. cit., pp. 6 and 7, Tab. 1 a, Obs. 5. Male 32 years. Acute abscess. Duration, four weeks. A typic pneumonia ten weeks before; base of right lung posteriorly. No signs of cavity; no adhesions. Paste of zinc cl. 2, in eighth intercostal space; resection of 5 cm. in eighth and ninth ribs; new application of zinc cl. 2 paste nineteen days after exploratory puncture; abscess opened with thermo-cautery, 600 c.cm. of pus removed; treatment had lasted five weeks. Complete recovery in four months.

Case 24, 1889. Cummins, A., British Med. Jour., 1889, Vol. 1, p. 299. Female, 32 years. Abscess of lung; hemoptysis. Duration, six months. There was dulness of clavicular and infra-clavicular regions of left lung; increased vocal fremitus; fluctuation between eighth and ninth ribs on axillary line. Oblique incision, two inches in length, over eighth and ninth ribs, a dram of pus evacuated by means of probe; an opening was found between ribs, this was dilated by forceps and fingers; 3-4 oz. of fetid pus escaped; air passed in and out of cavity with respiration and expiration; pus discharged freely, lost fetor expectoration diminished; finger inserted every two or three days. Recovery. Patient began to improve and left hospital; re-admitted a few months later and died.

Case 25, 1889. Delpratt, Brit. Med. Jour., Vol. 1, p. 470. Male, 33 years. Abscess of lung. Calculus, pyelo-nephritis; base of left lung; adhesions. Pneumotomy without costal resection; drainage. Drainage tube removed at the end of three months; recovery in six months.

Case 26, 1889. Mosetig Moorhoff, Wiener Med. Presse, 1889, p. 1. Male, 22 years. Abscess following a traumatic fistula. Duration three years. Cause gunshot wound of chest, base of left lung; adhesions. Incision; three months before operation had resected fourth and fifth ribs; diagnosis, an empyema; pneumotomy enabled the operator to remove three fragments of ribs located in the parenchyma. In seven days wound was nearly healed, then Jacksonian epilepsy appeared which proved fatal three weeks after the operation.

Case 27, 1889. Selby, Brit. Med. Jour., Vol. 2, p. 766. Male, 26 years. Pulmonary abscess; axillary line right side at level of fifth rib; no signs of cavity at time of operation; adhesions. Two negative exploratory punctures; third puncture below preceding strikes pus. Resection of one and one and one-half inches of fifth rib; no pus in pleural cavity, lung hard and congested; abscess was not incised. Fetid expectoration, signs of cavity at base of right lung; recovery.

Case 28, 1889. Jonq. Reder. Tyds i. 13. 1889, in Quincke Witt aus greozgeb, 1895, 1 obs., pp. 6 and 7. Male, 33 years. Acute abscess, lasting several days; pneumonia on fifteenth day; base of left lung. Signs of cavity; pleural adhesions. Exploratory puncture; positive aspiration, lavage injections of iodin; abscess 5 cm. below surface. Recovery.

Case 29, 1890. Herbert Hawkins, Lancet, 1890, Vol. 2, p. 1330. Male, 14 years. Abscess, expectoration fetid; duration three weeks; pneumonia; left axillary region. Signs of cavity; adhesions; there was a consecutive purulent pleurisy. Positive puncture, pus at depth of 5 or 6 cm. Incision without costal resection; adhesions; pneumotomy; drainage. Recovery, but two days after patient had purulent pleurisy; empyema. Recovery in seven months.

Case 30, 1890. Hoffman, Deut. Med. Woch., 1890, p. 1156. Male, 24 years. Fetid meta-static abscess; duration, several weeks; otitis media and pyemia; base of right lung posteriorly. No signs of cavity; adhesions. Positive exploratory puncture. Costal resection; pneumotomy; drainage. Recovery in seven months.

Case 31, 1890. Liedaird, Lancet, 1890, Vol. 1, p. 964. Pulmonary abscess; two and one-half months; pulmonary affections undetermined; left base axillary line. Signs of cavity; adhesions. Exploratory puncture in fifth intercostal space; positive. Incision at level of puncture; resection of sixth rib, flow of pus; dilatation of wound cavity covered with calcareous masses; irrigation with boric acid produces coughing spells. Died five days after from hemoptysis. Necropsy; cavity size of goose egg, no bronchial communication, recent tuberculosis.

Case 32, 1890. Ramsay, Obs. 3, Annals of Surg., 1890, Vol. 6, p. 34. Female 17 years. abscess. Duration, one month; Measles and pneumonia one month before; to left. Signs of cavity. Resection of third, fourth and fifth ribs, opening of cavity with thermo-cautery, tamponing. Septicemia in two months; death. Necropsy: Ramsay says there were multiple abscesses.

Case 33, 1890. Ramsay, Obs. 4, Annals of Surg., 1890, Vol. 6, p. 34. Abscess; few months duration; typhoid fever; inferior lobe of right lung. Resection of third, fourth and fifth ribs under median line; pneumotomy with thermo-cautery, little pus escaped, tamponing. Perfect recovery; patient has been able to resume work.

Case 34, 1891. Green, Lancet, 1891, Vol. 1, p. 193. Male, 6 years. Acute abscess; eight days' duration; pneumonia of five weeks' standing; base of left lung. Puncture in fifth intercostal space in axillary line. Incision: pneumotomy on trocar, drainage. Recovery in twelve days.

Case 35, 1891. Huber, Med. News, 1891, Vol. 59, p. 455. Male, 4 years. Acute abscess; six weeks' duration; pneumonia; left summit forward. No signs of cavity; adhesions. Incisions in third intercostal space without costal resection; exploratory puncture confirmative, dilatation of puncture, drainage. Recovery in eight months.

Case 36, 1891. Indiania, Med. Gazette, 1891. Calcutta in Morillon, These Paris, 1897, p. 5, des Tableaux. Male, 35 years. Abscess of lung opened and fistula; fistula going from below up back toward axilla; four months' duration. Located at base of right lung posteriorly; adhesions. Resection of eleventh rib posteriorly; hemorrhage from intercostal artery, three ounces of fetid pus; irrigation with bichlorid of Hg. Recovery with retraction of thoracic wall.

Case 37, 1891. Terriet, Soc. de Chirurgie, 1891, p. 741; Morillon, Paris, 1897, p. 62. Abscess of lung, secondary to liver abscess that has opened in the bronchi; one year's duration; liver abscess dysenteric; located at base of right lung posteriorly. Signs of cavity; adhesions. Puncture behind in axillary line posteriorly, in eighth interspace; escape of pus. Resection of eighth rib; drainage of abscess; improvement, but accidents of retention cause symptoms of gangrene thirteen and a half months afterward; new resection of eighth rib; incision of lung; this incision leads into a dilated bronchus, curretement of this bronchial dilatation. Complete recovery; patient seen two years after recovery, he is a navy surgeon and can resume his work.

Case 38, 1892. Andrews, Chicago Med. Rev., 1892, Vol. 3, p. 537. Male. Abscess of lung, several years' duration; recurrent pneumonia; cavity of middle lobe; pleural adhesions. First puncture negative, second puncture under chloroform entered cavity at depth of 7 to 18 cm. Incision, trocar inserted in the sixth interspace; pneumotomy; amelioration four months later because of retention; thorocoplasty was made; resection of third, fourth, fifth and sixth ribs in the axillary line opening of a large cavity containing calcareous débris. Recovery with fistula. Death four and one half years later from acute broncho-pneumonia.

Case 39, 1892. Ricard in Record Gazdezhop of 1892, Maus et Soc. Chir., 1895, p. 689. Male, aged 36 years. Suppurative interlobular pleurisy of left lobe or abscess of lung. Several months; pleuro-pneumonia; traumatic of three months standing; right axillary region; no signs of cavity; adhesions; eleven negative and one positive puncture. Resection of fourth rib on axillary line of seventh and eighth ribs on a level of last puncture; exploratory puncture; opening of cavity with thermo-cautery; cavity was 2½ cm. below surface tamponing. Rapid improvement; recovery without fistula in thirty-four days.

Case 40, 1893. Fairchild, Chicago Clin. Rev. Vol. 9; No. 93 in Wein. klin. Woch., 1893, p. 633. Male, 55 years. Abscess of lung. Pneumonia. Location, base. No signs of cavity; adhesion. Repeated negative punctures; at last a positive puncture in fifth intercostal space. Incision in fifth intercostal space on trocar section of 2 cm. of fifth rib; pneumotomy; abscess containing eleven ounces of pus; drainage; irrigation; no coughing spells. Uneventful recovery in one year.

Case 41, 1893. Huber, Arch. of Baldiatrue, Vol. 10, 1893, p. 1006. Age, 13½ months. Acute abscess. Acute lobar pneumonia. Located at base of left lung. No signs of cavity; adhesions. Two positive exploratory punctures in third intercostal space. Incision upon a trocar as psoas; pleuro-pneumotomy; one and one-half ounces of pus; drainage; abscess communicates with bronchus. Rapid recovery.

Case 42. E. F. Ingals. Jour. Am. Med. Assn., Vol. 27, p. 397. Female. aged 40 years. Abscess of lung. Liver abscess. Located in lower outer cover of right mammary region. Postive puncture; fistula left along needle. Five months after first seeing of patient portions of two ribs resected; lung tissue penetrated and abscess cavity opened; cavity communicated with liver abscess and bronchial tubes; drainage tube. Failed after operation; died in three weeks.

Case 43. E. F. Ingals, Jour. Am. Med. Assn., Vol. 27, p. 397. Male, aged 36 years. Pneumonia. No positive signs of a cavity. Punctured between seventh and eighth ribs near angle; positive; drew off offensive pus; another positive puncture six days after the first; third punture negative. Recovery.

Case 44, 1893. Mouson, A., Lancet, Vol. 1, 1893, p. 1196. Female, aged 32 years. Thrombosis of lung or mediastinal abscess discharging through lung. Duration, five months. Sickness dated from child-birth, about five months before; slight cough before that. Location, right posterior apex. Signs of cavity. Incision in right interscapular region; after piercing third right intercostal space, near angle of ribs, small quantity of pus. Patient died twenty days after operation. No necropsy.

Case 45, 1893. Tizebicky, Wien. klin. Woch., 1893, No. 2, 1722. Female, aged 42 years. Pyemia abscess, duration fifteen days. Peurperal infection of two months' standing. Location, base of right lung posteriorly. No pleural adhesions. Punctured; 500 c.c, of pus. Resection of seventh rib three days after incision; pneumothorax, Death ten hours after. Autopsy: No pleural adhesions; serous pleurisy in stage of resolution; operation in extremis.

Case 46. Chuston by Littlewood, Brit. Med. Jour., 1894, Vol. 1, p. 69. Aged 12 years. Two small pulmonary abscesses. Resection of two ribs; pneumotomy, Recovery.

Case 47, 1894. Delageniere, Arch. Provenciales da Chirurgie, 1894, Janeviei. Female, aged 37 years. Lung abscess; pneumonia; pleural adhesions. Pneumotomy after resection of sixth, seventh and eighth ribs. Recovery; maintained no fistula.

Case 48, 1894. Kasauli, in Fabricant Chir. Vieshnik, 1894, p. 763. Obs. 29. Male, aged 36 years. Abscess of lung; duration, eighteen months. Gunshot wound of chest eighteen months before; base of left lung; adhesions. Incision at time of accident; incision of second and third ribs; persistent fistula; accidents of retention and of septicemia necessitating, eighteen months after, a pneumotomy; eighth rib resected; opening of an abscess. Recovery but still had a fistula forty days after.

Case 49, 1894. Neuber, Mittheil d. Veseius Schleswig Holstein Aerzte, 1894, p. 55, in Quincke loc. cit., Tab. 11a, pp. 20 and 21. Male, aged 45 years. Chronic abscess of eight months' duration. Calcareous concretions in bronchi; base of right lobe posteriorly. Signs of cavity; no adhesions. Resection of eighth, ninth and tenth ribs; 18 cm.; pneumotomy six days after; 500 grains of pus and calcareous concretions. Recovery with persistent fistula; patient is alive four and one-third years after; general good health; however, there persists a fistula and a cavity the size of a fist secreting a mucus liquid; bronchi open in this cavity.

Case 50, 1894. Rochester Med. News, 1894, in Morillon Th. Paris, 1897, p. 96. Male, aged 15 years. Pyemic abscess of a few days. Appendicitis operated on twenty-seven days before. Location, base of left lung, pos-

teriorly. Signs of cavity. Resection of 6 cm. of sixth rib on posterior axillary line; pneumotomy; 8 c.c. of sanguinal pus; drainage. Improvement twenty-three days after, wound healing; no more signs of cavity.

Case 51, 1894. Matequon, Arch. gen. de Med., 1894-2-1, p. 162. Male, aged 22 years. Chronic abscess; hemoptysis; profuse expectoration; one and one-half years duration. Acute pneumonia. Location, right apex, forward; signs of cavity; ancient and firm adhesions; two negative exploratory punctures a long time before operation. A resection of 4 cm. of second rib; positive exploratory puncture; incision with thermocautery of 5 cm. of pulmonary parenchymia; a cavity opened; accidents of retention four days after second pneumotomy, after negative puncture at base of first cavity. Recovery after relapse, which necessitated a third pneumotomy; several hemoptyses; profuse expectoration; cicatrization in three months. Patient seen in six months after in good health.

Case 52, 1895. Berger, Soc. de Chir., 1895, p. 716. Abscess of the lung. Rib resection; pneumotomy with a cautery; incision 4 cm. in depth; no abscesses found, but the hemorrhage necessitates a tamponade and suspension of operation. Death several days after. Necropsy: The pulmonary incision is found just between two purulent cavities.

Case 53, 1895. Soc. de Chir., 1895, p. 733, Monod. Male, aged 35 years. Abscess at base of lung. Signs of cavity; adhesions. Resection of the seventh and eighth ribs; pneumotomy; cavity located higher up than had been thought; opened with thermo-cautery after two exploratory punctures; it had the volume of a walnut. Recovery.

Case 54, 1895. Quincke, Mittheil aus Zrenzgeb der Med. Chir.. 1895, p. 1; loc. cit., pp. 6 and 7, Tab. 1, Obs. 7. Male, aged 23 years. Acute abscess three weeks after onset; profuse expectoration and hemoptysis; later bloody expectoration; nine weeks' duration. Pneumonia twelve weeks previous. Location, base of left lung, posteriorly; no signs of cavity. Incision: Application of ZnCl. 2 paste in ninth rib intercostal space; eighteen days after resection of ninth rib, exploratory puncture; no cavity is found. Complete cure in six weeks; rapid retraction of thoracic wall.

Case 55, 1895. Quincke, Mittheil aus Zrenzgeb, 1895, dd. a. B., p. 1. Male, aged 33 years. Acute abscess of lung; two months duration. Pneumonia due to aspiration of mud. Location, base of left lung; no signs of cavity. Puncture; 300 c.c. of serous fluid. Sudden death ten days after puncture. Necropsy: Sero-purulent pleurisy and primary abscess of lower left lobe, opening into pleura bronchi; ectasis and cicatrix of a healed abscess situated above first mentioned abscess; right-sided pneumonia.

Case 56, 1895. Ricard, Soc. de Chir., 1895, p. 689. Pyemic abscess mistaken for interlobular pleurisy. Location, base, posteriorly; no signs of cavity; partial adhesions. Resection of 10 cm. of eighth rib; incision; partial pneumothorax; abscess located higher and in the lung; is incised and drained. Recovery.

Case 56, 1895. Tuffier, Soc. de Chir., 1895, p. 766, Obs. 2. Male, age not given. Lung abscess; pneumonia. Incision without costal resection; complete pneumothorax focus could not be opened. Pyepneumothorax which was followed by empyema. Death one year later. Necropsy: Purulent pleurisy and abscess not opened.

Case 58, 1895. Valton, Belgique Medicale, 1895, Vol. 2, p. 545. Male, aged 13 years. Abscess of lung; lung cavity; fetid expectoration; eighteen months duration; pneumonia. Location, base of right lung. Resection of the seventh, eighth and ninth ribs; lung apparently normal after several negative punctures had been made; pus was found; pneumotomy with thermo-cautery; after suturing lung to pleura partial cleansing of cavity; drainage. Death twenty days after from exhaustion.

Case 59, 1895. Webb, J. E., London Lancet, Vol. 1, 1895, p. 1140. Female, aged 27 years. Abscess of lung. Duration, one month. Maternal history of phthisis inflammation of lung in early childhood. No physical signs of cavity. Puncture; anterior axillary line, sixth interspace; twelve ounces of pus removed. Trocar and canula inserted into cavity just above angle of scapula, between it and vertical column, directed forward and outward; fourteen ounces of pus removed; drainage tube passed through canula; iodoform injected. Two months after operation discharge ceased; two and one-half months later fluctuation was detected in the fifth interspace below the nipple; incision made and pus evacuated; this sinus closed in a few days; ultimate recovery.

Case 60, 1896. Bushnell, Am. Jour. of Med. Sci., 1896, Vol. 112, p. 298. Male, aged 36 years. Abscess of the lung; interlobular pleurisy; several weeks' duration. Acute pneumonia; location, base; partial adhesions; three positive punctures in sixth interspace. Incision; in sixth interspace no adhesions at this level; partial pneumothorax without gravity; puncture of lung; pus is immediately under the visceral pleura. Rapid disappearance of pneumothorax; six punctures parietal and five punctures a little later. Completely cured; abscess discharged into bronchi; recovery in seven months.

Case 61, 1896. Esquerdo, Rev. de Cien. Med. de Barcel., 1896, Vol. 22, pp. 244-250. Male, aged 42 years. Lung abscess; pain in side and dippuella cough; expectoration profuse; at first purulent, later putrid; slight hemoptysis; fourteen months duration. Exposure to cold; sailor. Right lung; signs of cavity; no pleural adhesions. Incision above seventh right rib, extending backward to axillary line; resected 10 cm. of rib; sutured lung to parietal pleura; explored with finger; induration found; thermocautery tip introduced into induration; cavity found and contents evacuated; packed with iodoform gauze; fourth day, cavity washed with warm boric acid; it came through into wound; solution came through into mouth; irrigation repeated many times; after eight days drainage tube put in. Cough and expectoration became less after operation; cavity became swollen; at end of forty days, no discharge from tube and patient has no cough or expectoration; four days after this he had a slight hemoptysis; ultimate recovery.

Case, 62, 1896. Luther, Australian Med. Gaz., 1896, Vol. 15, p. 344. Male, aged 37 years. Lung abscess opening into a bronchus; duration, six weeks. Chill and pain in left side; located in left lung; no positive sign of cavity; pleural adhesions. Incision over seventh rib; center of incision midway between spine and wound in axillary line; part of seventh rib resected; adherent pleura; lung easily broken down by finger; one-half pint of pus and debris; cavity douched with 40 per cent of creolin; drainage. Recovery; great relief. Cough and expectoration ceased; night sweats did not recur; temperature fell to 100, then to normal five days after operation; gained strength rapidly; perfect recovery.

Case 63, 1896. Sims, Med. Rec., 1896, Vol. 49, p. 500. Lung abscess. Incison and drainage. Recovery.

Case 64, 1897. Andrews, in Morrillon de Paris, 1897, p. 71. Male, aged 17 years. Lung abscess; duration several months; location, base of left lung; pleural adhesions. Puncture, 500 c.c. of pus. Resection of second rib, posteriorly; pneumotomy; enlargement of the puncture wound. Rapid recovery; seen sixteen years later; cured.

Case 65, 1897. Andrews in Morrillon de Paris, 1897, p. 72. Female, aged 35 years. Abscess of lung; several months duration. Angio-cholecystitis; cholecystenterostomy after mercury. Location, right lobe, posteriorly; no signs of cavity; pleural adhesions. Punctures of lung and liver negative. Resection of two inches of seventh rib posteriorly; puncture negative; trocar inserted in all directions; at last reached a purulent cavity internally close to the vertical column; pneumotomy with cautery; 150 c.c. of pus. Recovery in ten months.

Case 66, 1897. Carl Beck, N. Y. Med. Jour., 1897, Vol. 66, p. 207. Male, aged 31 years. Duration, three months. Pneumonia when 10 years of age; in November, 1895, pleuro-pneumonia followed by cough and fetid expectoration. Location, right side anteriorly and below; signs of cavity. Incision over ninth rib from post axillary line to transverse process of ninth dorsal vertebra after right eighth and tenth ribs were resected; pleura was packed with aseptic gauze; needle pushed into lung; cavity entered; offensive pus aspirated with needle; opening dilated and packed with gauze. Considerable cough and expectoration after operation; patient improved rapidly; wound closed two months after operation.

Case 67, 1897. J. Curnow, London Lancet, 1897, Vol. 2, p. 1188. Male, aged 37 years. Empyema and abscess of lung; twelve days' duration. Acute pneumonia; apex of left lower lobe; signs of cavity not certain; pleural adhesions. Positive puncture below angle of left scapula; twenty-four ounces of odorless pus removed. Incision in eighth interspace, median axillary line; twenty-four ounces of pus removed; drainage tube. Patient died next day. Necropsy: Right lung showed congestion and bronchitis of lower lobe of left lung; adherent pleural pneumonia abscess; cavity 2 cm. from apex, posteriorly.

Case 68, 1897. Edwards, London Lancet, Vol. 2, 1897, p. 1583. Female, aged 21 years. Lung abscess of two months duration; pleuro-pneumonia of right side; no positive signs of cavity. Puncture in the eighth interspace below angle of right scapula; two and one-half to three inch cavity was revealed; offensive pus; incision two and one-half inches long over ninth rib below angle of scapula; one inch of ninth rib resected; trocar and canula put into cavity and opening enlarged with finger and forceps; rubber drainage tube. Marked improvement; three days later temperature increased and condition was critical; one week after operation improvement again took place. Perfect recovery six weeks after operation; wound closed.

Case 69, 1897. De M. Moir, London Lancet, Vol. 1. 1897, p. 105. Male, aged 34 years. Liver abscess ruptured into the lung; liver abscess had existed about ten months. Etiology: Malarial perineal abscess and gonorrhea; obstructed liver abscess breaking into lung. Location, right lung in axilla; signs of cavity. Liver abscess incised and drained through the sixth interspace about two months before lung abscess was opened; mass far back in right axilla over fifth rib; one inch of fifth rib resected; counter opening in front in fourth space below nipple, opening up a secondary cavity which communicated with the first, also with liver abscess; drainage tubes in both incisions; taken out after seventeen days; wound closed rapidly. Discharge and expectoration diminished. Gradual improvement and ultimate recovery.

Case 70, 1897. Routier, Soc. de Chir., 1897, p. 138. Lung abscess; no signs of cavity; pleural adhesions. Pneumotomy after costal resection. Patient getting better when observation was reported.

Case 71, 1897. Ballington, Arch. Gen. de Med., 1887, Vol. 20, p. 46. Male, aged 6 years. Pleurisy and lung abscess. Pneumotomy; drainage of pleuro and abscess cavity. Recovery.

Case 72. Maydill, Jour. Amer. Med. Assn. Male, aged 29 years. Lung abscess of one month's duration; rupture of lung, posteriorly; signs of cavity; partial pleural adhesions. Resection of rib over area of dulness near angle of scapula; cautery used to open cavity; escape of fetid fluid; masses of gangrenous lung discharged. Pulmonary edema and pneumonia of sound lung followed recovery. Cavity slowly diminished in size.

Bronchiectasis.—A dilatation of a bronchus may be cylindrical or ampullar, local or diffuse. (Grawitz.) Etiologically it may be a congenital defect or anomaly. (Welch.) It may be intrinsic, the result of inflammation, necrosis, softening and dilatation, with retention of secretion in the bronchi; extrinsic, the result of contraction of the lung tissue or pleuritic adhesions. The ampullar variety when localized is the one which concerns the surgeon. The universal bronchiectasis, or the entire involvement of the bronchial tree (Osler), should not be treated surgically. Habershon [52] reports autopsy with multiple gangrenous bronchiectases of all lobes of both lungs. Pathologically the wall of the bronchus may be attenuated and its mucosa lined with pavement epithelium; more commonly it is ulcerated, with the lung tissue in the neighborhood involved in an inflammatory infective process. As surgical bronchiectasis is secondary to other pathologic conditions its symptoms are usually intermingled with those of the original disease. In the ampullar variety, however, the cough and expectoration are distinctive. The patient will pass many hours without coughing, followed by a violent attack with the expectoration of several drams or even ounces of a grayish, purulent fluid, with a sour and sometimes fetid odor; the microscope reveals crystals of fatty acids, occasionally those of hematoidin, and in tubercular cases bacilli. The physical signs are those common to cavities; exploratory puncture gave positive results in 50 per cent. of the cases reported. (Terrier.) Endeavor has been made to disinfect and medicate cavities of this class through inhalation. This up to the present has not been very successful. Hesse, of Schwartzenberg, showed that dust does not reach beyond the third division of the bronchus. Dr

[52] Lancet, London, April, 1894, p. 1012.

Homer W. Thomas has made some excellent and interesting experiments in this line; he showed that vapors were carried into the alveoli themselves and demonstrated in one of the cavities on which I operated that the cavity could be filled with a sterilizing vapor.

Operation.—The sacculated is the only variety that admits of surgical treatment, and in this we have again the difficulty of differentiating between a number of small cavities closely situated and a large cavity. This was illustrated in a case to be related subsequently. The great obstacle in the surgical treatment of this class of cases is our defective localization, and while the radiograph shows distinctly the outline of large cavities it is not yet practical with small ones. Operation should be the same as that performed for abscess, though not more than two ribs should be resected. Adhesions were present in 84 per cent. of the cases operated. Digital exploration of the lung may aid in the localization of the cavity. The exploratory needle is also of service; when located the scalpel should be used to open the abscess and the cavity should be tamponed with iodoform gauze. Osler[53] cites a case of death following the operation for bronchiectasis with fetid bronchitis. Hofmokl[54] strongly favors the opening and drainage of these cavities and reports 42 cases, 14 cures, 3 fistulæ, 24 deaths, 1 result unknown. The results of operations in this class of cases have been very unsatisfactory. Roswell Park[55] collected (including Truc's) 23 cases with 9 deaths. Of 38 cases collected by Tuffier there were only 9 cures; certainly not a tempting inducement for incision and drainage. Leser,[56] of Halle, favors this operation. I have collected histories of 44 cases of bronchiectatic cavities that were operated upon; of these 25 recovered, 19 died. Of the 19 deaths, 11 were from undetermined causes, 1 from chloroform syncope, 1 from acute bronchitis, 2 from collapse, 3 from brain abscess, 1 from hemorrhage. We will await with interest the results of local compression after the removal of the thoracic wall as a treatment for this class of cases, as well as the results from artificial pneumothorax either of which I believe is preferable to drainage.

Case illustrating local compression, referred by Drs. Homer W. Thomas and Geo. W. Johnson: Maggie C., aged 48, admitted to Cook County Infirmary October, 1897, suffering from pulmonary tuberculosis; bacilli demonstrated; evening temperature, 102–103°. Physical examination reveals consolidation of both apices; râles universal; amphoric respiration demonstrated in left upper lobe anteriorly; the cavity is apparently large, extending from the first interspace to the third in the anterior axillary line, and having a transverse diameter of about three inches; the most pronounced signs are at the lower margin of the second rib; there is also evidence of a cavity in apex of left lower lobe posteriorly. The belief was that the cavity was very large.

Diagnosis.—Bronchiectatic cavities (tubercular).

Operation.—November 14, 1897, resection of three inches of the second rib, left side, without opening the pleural cavity; found pleura adherent; Paquelin cautery was used and a small cavity the size of a walnut was opened; this was packed with iodoform gauze and the lung was compressed. The patient was in good condition on the table; six hours after the patient's temperature dropped to 95°, pulse became extremely weak and 160 beats a minute. Active stimulation was resorted to and in eight hours she rallied perfectly. The packing was not disturbed for three days, when it was removed; it was thoroughly saturated with pus and blood. The dressing was changed daily thereafter. The quantity of discharge was excessive at first and gradually diminished; the daily temperature was 102° in the evening and gradually dropped from that until it reached 90°. The improvement, diminution of discharge, increased appetite and lowered temperature continued for about three weeks. The temperature began to rise; the night sweats reappeared, the expectoration rapidly increased, evidences of the formation of cavities in the right lung appeared and the patient grew rapidly worse. The cavity in the left lung was granulating and the discharge had almost ceased. The patient died rather suddenly on December 15, having shown no signs of approaching dissolution to within half an hour of her death.

Postmortem revealed multiple cavities in the upper lobe of the left lung and numerous cavities in the upper and lower lobes of the right lung; there was an acute necrosis and gangrene of the walls of the cavities in many places, which probably accounted for the sudden death. The cavity which had been drained was almost obliterated, cicatrized and covered with healthy granulations. There were numerous small cavities in close proximity to this which caused the error in the estimate of the size of the cavity at the time of operation. (History furnished by Dr. Clara Ferguson). Bronchiectatic cavities operated, forty-six.

Bronchiectatic Cavities from 1873 to 1897.

Case 1, 1873. Mosler and Huter, Klin. Woch., 1873, p. 43. Male, aged 49 years. Signs of bronchial dilatation of five years' standing. Incision at the upper border of the third rib to 5 cm. from the right border of the sternum; opening of the pulmonary cavity; drainage. Recovery; temporary improvement; death three months later, Oct. 5, 1873. Necropsy: Bronchiectatic cavity of the right upper lobe; amyloid degeneration of the viscera.

Case 2, 1875. Riclus, Klin., Clin. de la Pitie, 1894, p. 39, and Congress de Clinic, 1875, p. 62. Male, aged 50 years. Incision at the level of the third interspace; resection of 6 cm. of third rib. Recovery; amelioration; fistula persistent and accidents of retention; Eslander's operation two months later; death during chloroform anesthesia.

Case 3, 1882. W. Koch, Deutsch Med. Woch., 1882, p. 440. Male, aged 24 years. Signs of cavity in the right lower lobe; four years' duration. Resection of the sixth rib; the pleura adherent; opening with cautery of a large cavity the size of a child's fist situated three finger breadths from the surface of the lung and into which several large bronchi open. Second operation, resection of the eighth rib; no large cavity. Third operation, opening of a large cavity between the eighth and ninth ribs. Recovery with marked improvement.

Case 4, 1882. W. Koch, Deutsch Med. Woch., 1882, p. 441. Male, aged 24 years. Signs of cavity in right lower lobe with abundant fetid expectoration, 800 to 1000 c.c. in twenty-four hours; duration, four years. Resection of four inches of fifth rib; incision, oblong, with cautery; opening of cavity the size of a fist; expression of the lung in this cavity and opening of a second cavity the size of a child's head, from which escaped the little fetid fluid. Death seven days later, July 22, 1882; collapse. Necropsy: Phlebitis of the portal vein; amyloid degeneration of the viscera; broncho-pneumonia of the left lower lobe.

Case 5, 1882. Mosler and Huter, Berdl M. A. Cong. for Med., Vol. 2, 1882, p. 87. Pneumotomy without rib resection; opening of a bronchiectatic cavity; drainage. Recovery without fistula; cure maintained fifteen months; death March, 1876; general tuberculosis. Necropsy: Amyloid degeneration of viscera.

Case 6, 1882. Williams, Marshal Lancet, 1882, Vol. 2, p. 1107. Male, aged 40 years. Bilateral pneumonia with right bronchiectasis; abundant fetid expectoration; duration, one year. Vertical incision from fourth to fifth ribs; puncture of the lung with a large trocar; escape of air and fetid pus; drainage. Recovery; moderate improvement; death July 5; cerebral accidents. Necropsy: Total adhesion of right pleural; fistula between fourth and fifth ribs; numerous bronchial dilatations of the anterior portion of the lung, the larger, the size of an orange, has been opened; no other bronchial dilatations; abscess of the right cerebral hemisphere.

Case 7, 1883. Bull, North Med. Archives, 1883, Vol. 15, p. 17. Male, aged 25 years. Chronic general bronchitis with signs of cavity of right base; retraction of the thorax; duration, seven years. Incision in the seventh interspace with cautery; the lung examined with the finger; no cavities of large size; escape of fetid gas; hemorrhage; tamponade. Recovery; amelioration; several exploratory punctures without results; death one month later. Necropsy: Right pleural adhesions; multiple bronchiectases; no large cavity; interstitial pneumonia in the left; pleurisy and bronchial dilatation.

Case 8, 1883. Kazorowski, Deutsch Med. Woch., Vol. 9, No. 29, p. 432. Female, aged 26 years. A bronchial dilatation or purulent pleurisy. Resection of the sixth rib; pneumotomy; opening of a large cavity. Recovery; purulent pleurisy, consecutive.

Case 9, 1883. Laden, Deutsch med. Zeitung, No. 28, 1883, p. 375. Patient expectorates nearly one-half liter of fetid sputa and not containing portions of lung substance; cavity in lower portion of left lung or pleura; general condition bad. Incision without narcosis; large amount of fetid fluid. Recovered; two days later resection of rib; antiseptic irrigation; condition becomes better; improvement slight; fistula remains.

Case 10, 1884. Albert Wiener, Med. Press, July 6, 1884, p. 855. Bronchiectatic cavity in lower left lobe. Opened with thermo-cautery. No result.

Case 11, 1884. Biss and Marshall, Med. Times and Gazette, 1884, Vol. 1, p. 747. Male, aged 32 years. Bronchiectasis of the right base; bacteriologic examination negative; duration six months. Operation between the tenth and eleventh ribs; a puncture of the pleura; escape of air and bloody fetid liquid; drainage; irrigation with permanganate not tolerated. Death eighteen days later; cerebral accidents. Necropsy: Multiple bronchiectasis of the right base, of which the larger have been opened; the left lung normal; two brain abscesses.

Case 12, 1884. Tausustein, Cent. f. Chir., 1884, p. 290. Male, aged 37 years. Fetid, abundant expectoration; duration several years. Resection of four inches of the anterior portion of the eleventh rib; puncture of the lung with a trocar; dilatation of the tract; large cavity with resistent walls; insertion of drain. Recovery. According to Quincke this patient met death from hemoptysis.

Case 13, 1885. De Cerenville, Rome Med. Suisse Romande, 1385, Vol. 5, p. 462, obs. 1. Male, aged 50 years. Sacciform excavation of right lower lobe; puncture with a large trocar. Recovery. Death two months later; mania; refused nourishment. Necropsy: Pleural adhesions; a regular cavity surrounded by sclerotic tissues; no tuberculosis.

Case 14, 1885. De Cerenville, Ibid., obs. 2. Cavity of the left base; duration, four years. Puncture with a large trocar; dilatation. Recovery. Death nine weeks later. Necropsy: Irregular excavation of the left lower lobe; kidneys and liver sclerotic.

[53] Johns Hopkins Hospital Bulletin, Baltimore, 1889-90, Vol. i, p. 109.
[54] Wien. Klin. Woch., 1893, vi. p. 68.
[55] Ann. Surg., St Louis, 1887, v. 385. [56] Lancet London, March 9, 1891.

Case 15, 1886. Rochelt, Wiener Med. Presse, 1886, p. 1264. Male, aged 54 years. Bronchiectasis of the right lower lobe; examination for bacilli negative; duration three years. Operation in two sittings; first is resection of sixth rib; second is pneumotomy forty-eight hours later with the cautery; cavity the size of a hen's egg; drainage. Recovery.

Case 16, 1886. Rochelt, Weiner Med. Presse, No. 37. Female, aged 36 years. Fetid expectoration; fever; abscess formation at the base of left lung with excavation in the sixth interspace; incision for empyema. No amelioration of general symptoms; incision made in lung; pus and blood escaped; patient had an attack of hemoptysis; iodoform gauze tampons inserted; wound washed out next day; débris was taken out; iodoform tampons. Fever abated; cough and fetid expectoration ceased; complete recovery of gangrenous excavation inside of four weeks.

Case 17, 1886. Williams and Godley, Brit. Med. Jour., 1886, Vol. 1, p, 590. Male, aged 67 years. Bronchiectasis of the left base; duration two years. Incision at the level of the eighth interspace. Recovery. Death from cardiac syncope one year after operation.

Case 18, 1886. Williams and Godley, Med. Chir. Transactions, 1886, Vol. 69, p. 234. Female, aged 21 years. Multiple bronchiectasis at the level of the sixth and seventh interspace. Resection of an inch of the seventh and eighth ribs; puncture of the lung; drainage. Recovery, amelioration.

Case 19, 1887. Benson and Godley, Lancet, 1887, Vol. 1, p. 716. Male, aged 55 years. Signs of cavity upon the left in the axillary line. Incision in the tenth interspace. Death three days later. Necropsy: Multiple dilatations of the whole left lower lobe; no large cavity; fatty degeneration of the heart; nutmeg liver.

Case 20, 1887. Godley and Powell, Lancet, 1887, Vol. 1, p. 716. Male, aged 35 years. Duration of symptoms one year. Death from chloroform syncope at beginning of operation. Necropsy: Bilateral general bronchial dilatation.

Case 21, 1887. Godley, Lancet, 1887, Vol. 1, p. 717. Female, aged 29 years. Bronchiectasis limited to the left base. Resection of the tenth rib; opening of a bronchial cavity; drainage. Recovery. Not seen after leaving hospital.

Case 22, 1887. Stewart, Brit. Med. Jour., 1887, p. 179. and 1893, Vol, 1, p. 1147. Male, aged 27. Signs of cavity at angle of left scapula; duration nine years. Incision; rib resection; opening of a pulmonary cavity; counter-opening and drainage. Recovery.

Case 23, 1888. Hoffmokl, Soc. Imp. Roy. des Med. de Vienne, January, 1888. Male, aged 32 years. Rib resection; incision of the lung with cautery; opening of a cavity located at the depth of 7 cm.; escape of air. Recovery.

Case 24, 1889. Mackey, Brit. Med. Jour., 1889, Vol. 2, p. 660. Male, aged 20 years. Signs of cavity of right base; duration four years. Intercostal incision, pleuro-pulmonary adhesions; puncture; operation suspended on account of cough; eight days later incision of the lung; opening of a cavity filled with pus, Recovery. Death six weeks later. Necropsy: Multiple cavities occupying the whole of the right lower lobe; focus of pulmonary gangrene in the left lower lobe, but no bronchial dilatation of this side.

Case 25, 1889. Mosler and Volk, in Hortwin Inaug. Dissert., Griefsweld, 1889. Male, aged 13 years. Bronchiectasis of the left lobe. Resection of the third rib; opening of a cavity the size of an apple; counter-opening between the ninth and tenth ribs at the level of which we came upon a cavity containing one and one-half liters of pus; pleural adhesions. Death seven days later.

Case 26, 1890. Osler, Johns Hopkins Bulletin, Vol. 1, 1890. Male, aged 60 years. Had pneumonia several times in many years; has had pain in side and chest, spitting blood at times; cough and fetid expectoration; clubbed fingers; wasted; left side of chest retracted; amphora sounds; temperature 98 to 101. Resection of portion of fourth and fifth ribs; a series of cavities opened; these were packed with iodotorm gauze. Patient sank after operation and died on third day. Necropsy: General bronchiectasis; no tuberculosis.

Case 27, 1891. Krecke, Munich Med. Woch., 1891, p. 399. Male, aged 48 years. Bronchial dilatation of the left base; duration several years. Exploratory punctures; escape of pus; rib resection; incision; no pleural adhesions; pneumothorax makes the examination of the lung impossible. Death several hours later. Necropsy: Multiple bronchiectatic cavities; large cavity in the left lower lobe.

Case 28, 1891. Itaache, Mag. forgker, 1891, No. 4, in Quincke Mittheil aus d. Greuz. gebdaul-wehir, 1895, Vol. 1, p. 44, obs. 7. Male, aged 17 years. Sacciform bronchiectasis; signs of cavity; duration six years. Exploratory puncture; resection of 5 cm. of the eighth rib in the axillary line; no pleural adhesions; suture of the lung to the lips of the wound; eight days later opening of a cavity with cautery. The immediate result was amelioration. Peristence of a fistula; expectoration reduced from 900 to 100 c.c.; Death nine months later from meningitis (abscess of the brain).

Case 29, 1892. S. Coupland, Lancet, 1892, Vol. 2, p. 869. Female, aged 16 years. Cavities of the left base; no bacilli; duration two years. Operation by Pence-Gould; two exploratory punctures, below and above the eighth rib, May 10; May 17, diffuse swelling at level of puncture; incision; opening of pulmonary cavity; resection of eighth rib. Death from chloroform syncope. Necropsy: Saccular dilatations of the bronchi in the left lower lobe; another bronchial dilatation of the left upper lobe and the right lung.

Case 30, 1893. Hoffmokl, Wiener Med. Presse, 1893, April 30. Male, aged 43 years. Sign of cavity in right apex. Incision with cautery in the second interspace; escape of pus; drainage. Recovery.

Case 31, 1895. Reclus, Klin. Clin. de la ditie., 1894, p. 39, Cong. de Clin., 1895, p. 62. Male, aged 50 years. Incision at the level of the third interspace; resection of 6 cm. of third rib. Recovery. Amelioration; fistula persistent and accidents of retention; Eslander's operation two months later; death during chloroform anesthesia.

Case 32, 1895. Biondi, Clinica Chir.-Milaro, 1895, Vol. 3, p. 475. Male, 26 years. Left interstitial pneumonia, putrid brochiectasis; dry adhesive pleurisy and the existence of a superficial cavity in the lower part of the scapular region. Pneumectomy performed. Death fifteen hours later. Necropsy: Postmortem purulent pleurisy from escape of bronchiectatic fluid into pleuric cavity during the operation; multiple bronchi dilatations.

Case 33, 1895. Abrona, loc. cit., ibid. Bronchiectasis; fever and abundant expectoration. Pneumectomy performed. Recovery; temporary amelioration; reappearance of the irregular fever and expectoration several days after the operation.

Case 34, 1895. Quincke, Mitt. aus ten Granzg. der Med. Chir., band 1, H. T. 1, 1895, p. 15, obs. 2. Male, aged 25 years. Multiple bronchiectasis; signs of cavity upon the left posteriorly and at the base; expectoration amounted to 150 to 200 c.c.; duration two months. Incision in eighth interspace; three applications of paste of chlorid of zinc; eighteen days later resection of the ninth, tenth and eleventh ribs; application of the paste of chlorid of zinc four days later; exploratory puncture; pus; incision with cautery. Recovery; Patient left in August, 1896, and returned to his work.

Case 35, 1885. Quincks, loc. cit., p. 41, obs. 12. Male, aged 49 years. Cylindrical bronchiectasis of left base. Application of paste of ZnCl. 2; four weeks later resection of 4 cm. of tenth rib; no cavity; opening of a bronchiectasis. Recovery; amelioration; left hospital five months later.

Case 36, 1895. Quincke, loc. cit., p. 17, obs. 3. Male, aged 34 years. Multiple bronchiectasis of left base; retraction of thorax; no signs of cavity; duration several years. Incision in eighth and ninth interspace; application of zinc chlorid; resection of ninth and tenth ribs; wall incised with cautery; Zn. Cl. 2 on lung. Recovery; amelioration; patient escaped tuberculosis.

Case 37, 1895. Quincke, loc. cit., p. 18, obs. 4. Male aged 36 years. Brochiectasis of left base, secondary to a chronic bronchitis; twelve years' duration. Resection of ninth rib; Zn. Cl. 2 applied without result; later resection of the tenth rib. Recovery; amelioration; death two years later.

Case 38, 1895. Quincke, loc. cit., p. 27, obs. 7. Male, aged 66 years. Bilateral multiple bronchiectasis with sacciform dilatation in left base; signs of cavity; duration four years. Resection of 7 cm. of ninth rib; exploratory puncture without result; no pleural adhesions. Death; collapse before the incision of the cavity. Necropsy: Amyloid degeneration of viscera.

Case 39, 1895. Quincke, loc. cit., p. 34, obs. 9. Male, aged 12 years. Multiple cylindrical bronchiectasis of whole right lung; no signs of cavity; duration three and one half years. Resection of second, third, eighth and ninth ribs; exploratory puncture. Recovery; no amelioration.

Case 40, 1895. Quincke, loc. cit., p. 32, obs. 8. Female, aged 42 years. Bronchiectasis of left base; sacciform and cylindrical; no signs of cavity; five applications of Zn. Cl. 2. Resection of tenth rib; incision with cautery. Death four days later; collapse. Necropsy: Small bronchial dilatations; large cavity in left apex.

Case 41, 1895. Quincke, loc. cit., p. 35, obs. 11. Male, aged 31 years. Sacciform bronchiectasis of left base; no signs of cavity or pneumonia; duration five years. Incision; application of Zn. Cl. 2; resection of 4 cm. of tenth rib; incision of the cavity; drainage. Recovery; fistula. Death during second operation; hemorrhage and entrance of air into pulmonary veins.

Case 42, 1895. Quincke, loc. cit., p. 37, obs. 11. Male, aged 54 years. Sacciform bronchiectasis of left base. Three applications of Zn. Cl. 2 paste; resection of eighth, ninth and tenth ribs; pleural adhesions. Death one month later from hemorrhage.

Case 43, 1895. Walter, Congress de Chir., 1895, p. 101. Female, aged 26 years. Chronic bronchitis with bronchial dilatation of entire left lung; purulent pleurisy existed in lower portion of left pleura, probably consecutive to a point of pulmonary gangrene, with pleuro-bronchial fistula. Resection of seventh and eighth ribs posteriorly; pleural adhesions very large; resection of eighth and ninth ribs; opening of an enormous cavity; tamponade with gauze and sponges. Recovery without fistula after secondary throrocoplasty.

Case 44, 1896. Pierro, Selbet in de Agincourt thesis de Paris, 1896, p. 73. Male, aged 45 years. Bronchiectasis of left base; expectoration reaching as high as one and one-half liters. Resection of 5 cm. of the seventh rib; opening of a large cavity the size of a nut, surrounded by other small cavities at a depth of 5 to 6 cm.; escape of fetid pus; drainage. Recovery; marked improvement. Death twenty months later.

Case 45. Gerard Marchant in Guillmont and Herbert, Soc. Anatomy, 1896, p, 952. Bronchiectasis of right base. Resection of seven to eight cm. of fourth rib; resection of third rib; cavity located higher than had been supposed; opening of a cavity the size of a hen's egg; walls of cavity bleeding; two forceps left attached. Amelioration. Death four months after the operation. Necropsy: Right lung, except at a point in the upper lobe, is entirely destroyed and perforated by irregular cavities, the larger of which are the size of a walnut.

Case 46, 1896. Wills, Lancet, 1896, Vol. 1, p. 1563. Unilateral bronchiectasis. Rib resection; several punctures; negative; pleural adhesions. Death on the eleventh day. Necropsy: Unilateral cylindrical bronchiectasis without a large cavity.

Case 47, 1897. Coppehkow, Wratch. 1897, No. 6. Female. Bronchiectasis with hemoptysis. Pneumotomy; opening pocket the size of a nut. Recovery of hemoptysis; several days later second pneumotomy; opening of several cavities. Cure maintained several months.

Case 48, 1897. Nelaton in the Busard, Paris, 1897. Male, aged 34 years. Repeated bronchitis during past four years and secondary bronchiectasis of left base; interlobar pleurisy. Incision in the sixth interspace; no resection of ribs; opening of a cavity; drainage; irrigation incites cough. Death twelve days later; coma. Necropsy: Multiple dilatations of bronchi of left lower lobe; large cerebral abscess occupying the frontal and cerebral lobes; but one bronchiectatic cavity opened.

Case 49, 1897. Nelaton in the Brusard, Paris, 1897. Female. Brochiectasis. Pneumotomy performed. Recovery; amelioration for six months; recurrence.

Gangrene of the Lung.—Gangrene of the lung may be diffuse or circumscribed. It has four distinct stages: Necrosis, putrefaction, demarcation and elimination, and reparation. It is most frequently a result of acute pneumonitis. Andral found it present in 3.3 per cent of post mortems for pneumonia; Hughes found it in over 10 per cent. in Guy's Hospital (Paget). In place of resolution taking place at the proper time there is a death of lung tissue. The lung tissue is unable to react from the destructive effect of the infection by reason either of its character or intensity, and as a consequence gangrene results. Gangrene may be the result of a foreign body in the bronchus, an inhalation infection, a septic embolus, necrosis of an infarct, etc. It may be the result of an extension of infection from a bronchiectatic or abscess cavity or from a putrid bronchitis, when it is often multiple, as shown in a case by Walter D. de Jersey.[57] It may result from perforation into the lung of abscess cavities, as

[57] Lancet, London, Jan. 21, 1892, p. 27.

mediastinal or subphrenic, from perforation of the esophagus, with foreign bodies, as in a case reported by Pasteur, London, and operated by Bilton Pollard, in which a communication was found between the esophagus and the bronchus at its bifurcation; a gangrene of the right lung was produced; it was treated by double drainage. Gangrene occurs most frequently in the lower lobe, and is most often situated near the surface of the lung, next near the center and less frequently near the interlobar septum. (Tuffier.) After necrosis it may undergo rapid decomposition, depending upon the presence of saprophytes. In the diffuse variety an entire lobe may be involved. (Trier.) The separation of the slough is slow; the sequestrum may be expelled through the bronchus or through the chest wall by extension of the necrotic processes. The gangrenous areas are multiple in 15 per cent. of the cases.

Diagnosis.—The symptoms of gangrene of the lung are usually very pronounced, though they may merge from those of a severe pneumonia. When the typhoid mutterings, nervous prostration and evidence of intense intoxication continue beyond the usual limit for a pneumonia, gangrene should always be suspected. If it be diffuse, the breath and expectoration soon become offensive; the latter is a brown, frothy, muco-purulent fluid; it is often profuse; the amount expectorated in one seizure of coughing is some index to the size of the cavity; there is probably no odor so offensive as that of the breath in gangrene of the lung. In the circumscribed variety the gangrenous cavity may not communicate with the bronchus, in which case there would be no odor. There is usually circumscribed dullness but rarely edema of the chest wall. Exploratory puncture gives a foul-smelling fluid or a very offensive gas. This procedure is not devoid of danger. Gangrene of the tract of the needle and gangrene of the wall of the chest with emphysema followed in case of E. Bull; incision and drainage were resorted to with recovery. Errors in localization of cavities have been of frequent occurrence with the best diagnosticians. Barry called attention to this in 1726. Tuffier found exploratory puncture positive in but two-thirds of the cases. He emphasized its dangers and said it should be restricted to the time of operation. Lejous[58] removed the eighth, ninth and tenth ribs and detached pleura, made digital inter-pulmonary exploration for a case of gangrene, presumably of the lower lobe with negative result; the patient succumbed, and post mortem showed the gangrene in the upper lobe. In another case in which he made inter-pulmonary palpation he succeeded in locating the induration and opened a cavity near the spine. He favors this method. Dr. Routier,[59] Paris, favors digital palpation, and located in this manner an inter-lobar abscess ten centimeters from the surface of the lung.

The following diseases, bronchiectasis, fetid bronchitis and gangrenous pleurisy may be confounded with gangrene. The history aids very much in the differential diagnosis, while the physical signs and the result of exploratory puncture may be the same in both cases. Under medical treatment the mortality of this disease is upward of 80 per cent. Surgery has reduced this mortality somewhat, although it is still great. Sonnenberg says that in seventy-four operations 35 per cent. recovered. Langenbeck operated succesfully as early as 1879. (Gluck.) The surgical treatment of gangrene received its greatest impetus from Bull, Copenhagen, who made incision and drainage a recognized surgical procedure; his suggestions and conclusions have scarcely been improved upon. I therefore quote the following: "Limited pulmonary gangrene recovers without operation or puncture; extensive gangrene cannot be cured by bronchial drainage or aspiration, as the necrotic portions cannot get out; free incision should be made when gangrene is diagnosticated. If cavities are multiple, more than one opening may be necessary; operation is the only therapeutic efficient; pleuritic adhesions are an essential condition; vibration of needle with puncture is not a reliable negative symptom, nor absence of vibration positive of existing adhesions." Thomas Williams in 1877 diagnosed pneumonia followed by abscess and operated; patient died of pneumonia. When this was reported, Thompson, Bryant and Mamder favored this operation in discussion; Douglas Powell opposed it. Lowson reported a fatal case. Berkely Hill Sedgwich and S. C. Smith reported recoveries; the latter gave as indications for operation: 1, in cases where the gangrenous cavity is imperfectly drained through the bronchus; 2, where too much irritation is produced from the discharge; 3, in rapid emaciation; 4, unquestionable signs of cavity present.

The consideration of the results obtained in operations for gangrene shows a marked improvement as time has advanced, from Truc's cases, 1879 to 1884, 13 operations, 3 cures, 2 relieved and 2 on the way to recovery, 6 deaths. To those of Reclus, 1885 to 1895, 14 operations, 11 cured, 1 improved and 2 deaths.

Chloroform is the best anesthetic. (Tuffier.) The Schleich method of local anesthesia is good, and I consider it indicated here more than anywhere else. The question has been raised, should the operation be performed immediately or should we wait for certain pathologic changes to take place? The rules advanced in favor of delay are: 1, we should not operate until liquefaction of the slough has taken place; 2, we must be sure adhesions are present; 3, we must remember that circumscribed cases recover of themselves. The latter is the only rule of significance; when the abscess is small and there is free expectoration with the absence of toxic symptoms, time may be given with the hope of recovery without operation, though the sequestrum is rarely ejected through a bronchus. It must not be expected in the early stage that a cavity will be found; at this stage it will be a succulent, boggy mass, with very offensive odor; the mass should be freely incised for drainage, but no effort should be made at excision. The gangrenous cavity may have large vessels traversing it in which thrombosis has not taken place. Runneberg,[60] Fenger and Hollister[61] were early and strong advocates of the free incision and ample drainage.

It is not necessary to wait for the separation of the slough before operating, as the danger of retention and the extension of the process increases as time advances; there is little danger of operating too soon, as the process is usually advanced before the diagnosis is made; neither is it necessary to wait for adhesions. The pleural cavity is most always infected and should be freely drained; recoveries in the absence of adhesions are reported by Krause, Paget, Reclus and others. When the gangrene

[58] Paris Med. Week, February, 1897, p. 91.
[59] Paris Med. Week, Feb. 26, 1897, p. 97.

[60] J. W. Runeberg, Helsingfors, Deut. Arch. f. Klin. Med., 1887, xli.
[61] Am. Jour. Med. Sc., Philadelphia, 1881, Vol. xxxii, p. 370.

is situated high up it is very desirable to have adhesions, and unless they exist at the time of operation they should be induced by exposure and tampon or suture after the method of Péan, Roux and Godlee. The latter reports a case in which he adopted this method.[62] It is desirable to open into the most dependent portion of the cavity, as it allows of better drainage and prevents the escape of pus into the bronchus, though it contributes little to the healing, as this is accomplished by cicatricial contraction. If the gangrene be in the depth of the lung, the pulmonary tissues should be freely incised, hemostasis secured and the surface protected by the application of the Paquelin cautery. The trocar and canula are not to be used in gangrenous cases, as they do not admit of sufficient drainage and are likely to be occluded by the slough. Injections of disinfecting material have proven a failure and should not be used. O. Hewdke, of Warsaw, used various injections in four cases without a cure.[63] If the operation be performed early the question arises, Shall the necrotic portion be excised, or merely incised and drained? The principles of surgery governing this appear to be the same as those governing gangrenous tissue in other portions of the body, *i. e.*, the sphacelus should not be excised; it will separate at the line of demarcation. The auto-separation appears to have an additional advantage, as it insures the thrombosis of the vessels and lessens the liability to hemorrhage in a location in which the surgeon is not entirely master of the situation. When the sphacelus is detached, it should be carefully removed at the time of operation. The cavity should not be irrigated, particularly if it communicate with a bronchus; large incision and free drainage is all that is necessary. The period of time which is required for the separation of the slough is indefinite. I have found in my experiments that pressure necrosis of the lung with separation of the stump after ligature takes place very slowly; it requires ten to twelve days, which would indicate that the line of demarcation forms slowly. The length of time required for the closure of the cavity depends upon its size. It may, however, close rapidly, as is shown by the following case:

Mr. F. W. M., age 58, was seen by me in a consultation, out of the city, Nov. 16, 1893. He was in the third day of an ordinary croupous pneumonia of the lower lobe of the right lung. I saw him again on the 24th, eight days later. Resolution was well established, the temperature had subsided to 99 degrees morning and 100.4 degrees evening. I learned later from his physician that his convalescence from the pneumonia was slow; two weeks after my last visit, Dec. 7, I was informed that he had a thrombo-phlebitis of the left leg and that he still had a slight cough, with no expectoration. His temperature with the phlebitis reached 102.3 degrees. His convalescence from the phlebitis was also slow. On the 29th of December he complained again of pain in the right side (not severe), began to cough and had a slight muco-purulent expectoration. I saw him in consultation on Jan. 6, 1894, seven weeks after the onset of his pneumonia. He was having night sweats, had a dry hacking cough and slight dyspnœa. There was still some edema and tenderness in the leg and thigh. An examination of the right lung revealed a circumscribed area of dulness two inches in diameter, beginning just below the angle of the scapula. This area was sensitive on deep pressure; there was no edema of the wall. Respiratory sounds were absent and vocal fremitus diminished. The exploratory puncture gave one-half drachm of brown, sanguino-purulent, particularly offensive fluid.

Diagnosis. — Circumscribed gangrene not communicating with the bronchus. The question arose, was the phlebitis a sequence of the pneumonia and the gangrene the result of a septic embolus from the vein, or was the gangrene the direct result of the pneumonia and the phlebitis one of the manifestations of sepsis? This is a question which I am unable to answer with any degree of certainty, but from the course of the disease I believe it was the result of a septic embolism.

Operation.—St. Joseph's Hospital, Chicago, January 9, an incision 2½ inches long was made in eighth interspace immediately below the angle of the scapula. As the pleura was approximated the tissues were edemetous, showing that adhesions existed. (This tissue edema is one of the best evidences of adhesion of a suppurating focus to the wall either in the abdomen or chest; it far exceeds in value the vibration of the needle.) The pleura and underlying tissues were divided so as to admit the index finger; there was an escape of two ounces of fetid pus and some gas. Digital examination revealed a slough which was extracted with forceps; the cavity could be readily examined with the finger; its wall was irregular; there was no hemorrhage; it was not irrigated; a rubber drain was inserted; five days after the operation the odor had entirely disappeared and there was a clear serous discharge. On the twelfth day the drain was removed and on the thirty-third day he left the hospital with the wound entirely closed. This illustrates how early the drainage may be removed and how rapid the convalescence. Within three months he gained forty pounds and enjoys excellent health at the present time.

The extremity to which these patients may be reduced before an operation, and still be able to recover, is remarkable, as may be seen from the history of many cases; the surgeon should feel it his duty to operate on them even when it appears that they would not survive the hour of operation. The following is a good example:

Thos. K., age 22, on Sept. 9, 1897, was seized with a chill, severe pain in the left side and the usual symptoms of pneumonia. On the twelfth day of the pneumonia his temperature dropped and his symptoms improved. Four days later he began to cough and there was an expectoration of an offensive bloody fluid. A few days after the expectoration became yellow and still more offensive. The quantity increased with great rapidity, so that at the end of ten days the patient was expectorating a pint or more daily. He emaciated rapidly and became very weak. This deplorable condition continued until the 29th of December, when he was sent from the hospital to his home to die. Two weeks later he was seen by a very able practitioner who said he could not possibly survive three days. On the 2d of March I saw him in consultation; his pulse was 156, respiration 44, temperature 97 degrees; he was coughing incessantly; he could not speak above a whisper; the odor in the room from breath and expectoration was nauseating; he was emaciated to a skeleton, resting in a semi-stting position from which he could not be moved; his pupils were dilated and he was apparently drowning from the accumulation of fluid. The nurse stated that this had been his condition for nine weeks. From this history obtained from the patient's friends and nurse, and the physical signs present, a diagnosis of gangrene of the left lung was made. Local anesthesia was employed and a three-inch incision was made in the eighth intercostal space, post-axillary line; about a quart of most offensive pus with necrotic shreds of lung escaped; a double drainage tube was inserted; he gave a few gasping respirations and I thought he was dying; the cough subsided in a few moments, his breathing became easier, and when I heard from him last, three weeks later, he was able to sit up in bed. The long period of time which had elapsed between the apparent hopelessness of his condition and the time of the operation is an illustration of how long these patients stand the deleterious effects of the pus accumulation and how they rally when relieved.

The complications that arise in operation for gangrene are pneumothorax and hemorrhage. In the former the lung should be harpooned or grasped by the forceps and sutured to the edge of the wound. Tuffier collected nine cases of hemorrhage with four deaths. The hemorrhage usually followed the removal of the tampon; the quantity of blood necessary to cause death under these conditions is very small compared with the fatal quantity from external hemorrhage. The greatest care should be exercised in the dressings, and irrigation should be avoided. Priestley Leech[64] of Halifax introduced iodoform into the cavity

[62] Lancet, London, Oct. 20, 1888, p. 768.
[63] Lancet, London, Feb. 20, 1892, p. 440.

through the drainage tube with good effect. Tier,[65] Copenhagen, in four cases operated had three fatalities; one death from hemorrhage from drain pressure; in the successful case one-half of the lung was gangrenous, still patient recovered. Seitz[66] collected nineteen cases of gangrene operated, with four recoveries, four improvements and eleven deaths. Perier[67] reports continuous pleuro-pneumonic suture and drainage in second interspace for gangrene; the suture was made after opening the lung; recovery.

I have collected 96 cases of gangrene of the lung operated upon: 53 completely recovered; 3 recoved with fistula; 3 termination unknown; 37 died, 1 from cerebral embolism, 1 from meningo-encephalitis, 1 from pneumonia, 17 from undetermined causes, 3 from diffuse gangrene, 2 from septicemia, 4 from pyemia, 4 from exhaustion, 4 from hemoptysis.

Gangrene, from 1879 to 1897: Years According to Rotation.

Case 1, 1879. Cagley and Lawson, Brit. M. J., 1879, Vol. 1, p. 550. Male, 40 years. Gangrene, general condition grave; five weeks duration; pneumonia of left base posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision in ninth interspace, 5 oz. fetid pus, drainage. Death six days later. Necropsy: complete pleural adhesions, cavity with irregular walls, granular kidney, tuberculosis of right apex.

Case 2, 1880. Salomon Smith, Lancet, 1880, Vol. 2, p. 86. Male, 60 years. Gangrene. Duration, two months. Acute pneumonia, spurious, right base posteriorly. Signs of cavity. Exploratory puncture, putrid gas. Pneumotomy at the level of lower angle of scapula, no rib resection, ligation excited coughing. Death eight days later.

Case 3, 1881. Bull, Nordiskt. Archiv., 1881, vol. 13, p. 27, No. 17, in Runeberg Deutsche Archiv. für Klin. Med., 1887, p. 91. Female, 23 years. Gangrene. Duration two months. Acute broncho-pneumonia, left apex anteriorly. Signs of cavity. Puncture with a Pravaz syringe shows serosanguinous flood. Incision two inches long in fourth interspace at level of the puncture, dilatation with forceps; some days later extraction of fragments of friable lung; carbolic irrigation. Recovery, several attacks of hemoptyses during following weeks.

Case 4, 1882. Leyden and Koch, 1882, quoted in Fabrickaut. Male, 24 years. Gangrenous cavity in right lung, lower part; putrid bronchitis. Resection of sixth rib with thermo-cautery, drainage. Improvement.

Case 5, 1882. Leyden and Koch, 1882, quoted in Fabrickaut. Female, 29 years. Gangrenous cavity in right lung. Opened by thermo-cautery, washed out with thymol sol., drainage. Died from septicemia. Necropsy: suppuration near portal vein, broncho-pneumonia of opposite side.

Case 6, 1883. Boccheni, Cent. für Chir., 1883, No. 37, p. 598, and Med. and Raccoglitore, 1891, Vol. 2, p. 561, 5th series. Female, 27 years. Gangrenous abscess of lung; pneumonia; right apex laterally; adhesions. Exploratory puncture positive. Incision in right interspace without rib resection; puncture, then pneumotomy; issue of pus and of pulmonary débris. Amelioration; case reported before complete recovery.

Case 7, 1883. Sutton in Mosler, Wiesbaden, 1883, p. 38, and in Ramsay, Obs. 2. Male, 34 years. Gangrene, large cavity; Pneumonia five years previously; left base. Signs of cavity. Exploratory puncture, issue of pus. Incision in sixth interspace, drainage daily, carbolic irrigation. Sudden death thirty-first day. Necropsy; large cavity of the base.

Case 8, 1884. Cagley and Gould, Brit. Med. Jour., Jan. 1884, Vol. 1, p. 1065. Female 12 years. Acute metastatic gangrene. Duration eight days. Pyemia following otitis with an old mastoiditis; left base posteriorly. Signs of cavity. Puncture with large trocar, issue of pus and débris. Recovery in forty days.

Case 9, 1884. Drinkwater, Trans. of the Northumberland and Durham Society, May 15, 1884, in Revue des Sc. Méd., 1885, Vol. 25, p. 300. Male, 60 years. Acute gangrene. One month duration. Chronic bronchitis, acute pneumonia; right apex; adhesions. Incision of an abscess just below the clavicle, drainage of a pulmonary cavity through intercostal space. Improvement, recurrence three month later, incision and resection of one and one-half inches of the third rib, ablation of a portion of the gangrenous lung, drainage and irrigation; recovery without fistula.

Case 10, 1884. Fenger, Med. News, June 7, 1884, in Cent. f. Chirurg. 95, p. 208. Male, 36 years. Circumscribed gangrene. Six weeks duration. Croupous pneumonia; right base anteriorly. Signs of cavity. Puncture with hypodermic issue of gangrenous fluid. Resection of the fifth rib, puncture of the cavity and incision with the cautery, salicylic irrigation gave rise to cough, drainage. Rapid improvement, drain removed on twenty-second day; fistula six weeks after operation; recovery.

Case 11, 1884. Fermey, Dublin Jour. of Med. Sciences, Jan. 19, 1884, in Revue des Sc., 1885, Vol. 25, p. 299. Male, 30 years. Gangrenous cavity and empyema; base posteriorly. Incision at the level of lower angle of the scapula. Death five days later. Necropsy: diffuse gangrene.

Case 12, 1885. Gairchier and McLeod, quoted by Fabrickaut, 1885. Boy. Gangrenous cavity; left lung. Resection of ribs, drainage. Death after few days.

Case 13, 1886. Brookhouse, Lancet, 1886, Vol. 1, p. 1111. Male, 36 years. Gangrenous abscess, three months duration. Spurious pneumonia; left base posteriorly. Signs of cavity; adhesions. Puncture with large trocar in eighth interspace, axillary line, daily irrigation, cough. Death seven days later.

Case 14, 1886. Hevilich, Charité Annal, 1886, Vol. 2, p. 230. Female, 27 years. Pulmonary abscess, expectoration purulent and fetid. Three weeks duration. Puerperal infection; right base posteriorly. Signs of cavity; adhesions. Puncture positive, several punctures at the level of lower border of ninth rib, without result; positive puncture in ninth interspace in axillary line. Resection of four cm. of ninth rib; puncture, 3 c.c. of pus and fetid clots, dilatation of the tract, we come upon the cavity the size of a fist with irregular walls. Hemorrhage into cavity during operation arrested by tamponade; death three days later. Necropsy: Puerperal metro-peritonitis and para-metritis, right pneumonia and cavity of base of right lung the size of goose egg, embolism of the pulmonary artery, firm adhesions, another focus of pulmonary necrosis superficially in the right face.

Case 15, 1886. Perigmbec and de Beurnism, Francais Médicale, 1886, Vol. 2, p. 1463. Female, 12 years. Gangrene, hemoptysis and cavity, and bacilli. Several years duration. The pulmonary affection not determined; right antero-lateral region. Resection of 5 cm. of fifth and sixth ribs, pneumotomy with the cautery at depth of 3 cm., drainage, no irrigation. Complete recovery, no details.

Case 16, 1886. Wagner, Berlin Clin. Woch, Sept. 6, 1886. Male, 17 years. Gangrene of the lung and putrid pleurisy; croupous pneumonia of left side. Incision in eighth space near vertebral column, offensive odor, piece of gangrenous lung discharged through wound. Gradual recovery.

Case 17, 1887. Zezas, Corresp. Blatt of Schweiger. Aerzte, 1887, Vol. 17, p. 455. Male. Pyemic abscess. Five and one-half months duration. Pyemia secondary to a foreign body in the larynx; right base posteriorly. Signs of cavity; insufficient adhesions. Incision and resection of seventh rib (6 cm.), opening of cavity at a depth of 3 cm., tamponade and drainage. Death fourteen days later. Necropsy: Pyo-pneumothorax, insufficient adhesions, central edema from thrombosis of the jugulars, abscesses in the two lungs.

Case 18, 1887. Runeberg, Deutsche Aschit. für Med., 1887, Vol. 41, p. 91, Obs. 2. Female, 23 years. Gangrene and circumscribed pneumothorax; chronic bronchitis and multiple bronchiectasis bilateral; left upper lobe anteriorly and posteriorly. Signs of cavity; total adhesions. Exploratory puncture without result, puncture in the axillary line to the fourth interspace positive. Resection of 4 cm. of fourth rib in post-axillary line, small cavities, no pus, punctures with a fine trocar, no cavity. Two days later issue of pus through the tract; death ten days later. Necropsy: communication of the pelvis with the wound, gangrenous cavity, of lower lobe; cavity of the upper lobe of 4 cm. into which a bronchus opens, numerous small cavities in the upper and lower lobes, no more in the left lung, small cavities in the right at the base.

Case 19, 1887. Leyden, Arch. Gen. de Méd., 1887, Series 7, Vol. 20, p. 472. Gangrene; puncture. Incision, escape of large quantity of pus, irrigation. Recovery.

Case 20, 1887. Guermonpuz, Académie de Médicine, 1887, Vol. 18, p. 332. Male, 23 years. Gangrene. Four years duration. Typhoid fever; base. Signs of cavity. Exploratory pleurotomy; resection of two ribs, two pneumotomies. Recovery.

Case 21, 1887. Godlee, Lancet, 1887, Vol. 1, p. 512. Female, 19 years. Gangrenous abscess. Fourteen days duration. Pneumonia of six weeks duration; left base. No signs of cavity; adhesions; exploratory puncture. Incision in the eighth interspace without rib resection, cavity at a depth of 6 cm., drainage. Recovery, three and a half months later slight scoliosis.

Case 22, 1887. Godlee, Lancet, 1887, Vol. 1, p. 513. Female, 44 years. Gangrenous abscess; eight days duration. Pleuro-pneumonia of twenty-four days duration; right base anteriorly. No signs of cavity; adhesions. Incision in the seventh interspace above the nipple, no rib resection, drainage. Recovery, six weeks after opening of an abscess into the colon (Quincke) necessitated between a gangrene or an empyema.

Case 23, 1887. Dubmeil, Gaz. Hebd. des Sc. Méd. de Montpellier, 1887, p. 517. Female, 25 years. Chronic gangrene; duration fourteen months. Broncho-pneumonia, hemoptyses, no tubercle bacilli; right base posteriorly. Signs of cavity; adhesions. Puncture with fine trocar for the diagnosis of adhesions. Incision, resection of one and one-half cm. of the sixth rib; pneumotomy; opening of a series of cavities of the size of a hazel nut, drainage, borie acid irrigations incite cough and suffocation. Death one month later without improvement.

Case 24, 1888. Koch, in Openchowski Wratsch., 1888, p. 743, in Zeit. für Klin. Med., 1889, Vol. 16, p. 393. Male, 30 years. Gangrenous abscess; four months duration; pneumonia four months previously; right base between the post-axillary and mammary lines. Signs of cavity; adhesions. Two exploratory punctures negative, one month and three weeks before the pneumotomy. Resection of fifth and sixth ribs (10 cm.), opening of a cavity at a depth of 2 or 3 cm. the size of a fist, gangrenous focus in an old abscess, cauterization with the thermo-cautery. Recovery, irrigation with permanganate of potash excites cough, drains removed thirty-six days after the operation; eighteen months after recovery slight scoliosis and scar, depressed respiration, feeble on the operated side.

Case 25, 1888. O'Keel, Lancet, 1888, Vol. 1, p. 622. Pulmonary gangrene; several weeks duration; pleuro-pneumonia; right base; adhesions. Pneumotomy. Recovery.

Case 26, 1888. Poliard, in Pasteur Chir. Soc. of London, 1888, in British Med. Jour., 1888, Vol. 2, p. 279. Male, 7 years. Gangrene; Three weeks duration. Pneumonia, probably secondary to a foreign body; right apex anteriorly. Signs of cavity. Incision in the second interspace, enormous cavity; counter-opening in sixth interspace. Death on thirteenth day. Necropsy: Cavity occupying one-third of the center of lung (the three lobes affected), esophagus adherent to the right bronchus and communicating with the same, cause of this communication unknown.

Case 27, 1888. Page, London Lancet, 1888, Vol. 1, p. 572. Male, 13 years. Pulmonary gangrene with hydropya-pneumothorax; run over by a car. Signs of cavity, probably due to pneumothorax. Aspiration, 20 ounces of sanguinous serum. Pleura opened and tube inserted in fifth left interspace in mid-axillary line, offensive pus evacuated, tube taken out about one month after operation; immediate improvement; discharge lessened daily, piece of pleura and lung discharged, complete recovery.

Case 28, 1888. Pasteur, Brit. Med. Jour., 1888, Vol. 2, p. 879. Male, 7 years. Gangrene of lung; four weeks duration; insidious onset but had developed rapidly; right upper lobe. Signs of cavity. Cavity incised out extreme of right second space one inch from sternum, large quantities of gangrenous lung and putrid fluid were expelled, cavity reached to sixth rib, opening made in sixth space, and drainage tube inserted, cavity washed out twice daily, pus appeared later. Next morning patient much relieved; expectoration small quantities of frothy spits, free from pain; improvement not maintained; after ten days fetor and temperature reappeared; patient sank rapidly three days later. Necropsy: Huge cavity occupied anterior one-third of lung (right) lined with thin layers of granulation tissue, pericarditis present, esophagus adherent to bronchus, commenced between esophagus and right bronchus.

Case 29, 1888. Seitz, Inaug. Dissert., Würzberg, 1888. Male, 35 years. Acute gangrene; five weeks duration; typhoid fever six weeks; left base posteriorly. Signs of cavity; adhesions. Resection of seventh and eighth ribs, 4 cm., incision of lung with bistoury, cauterization, drainage. Death twelve days after a second cavity containing 250 grams was discovered. Necropsy: A right pulmonia and cathesia.

Case 30, 1888. Shewen, Aust. Med. Gaz., Sydney, 1888-89, Vol. 8, p. 173. Gangrene; pneumotomy. Recovery.

Case 31, 1889. Bastcanelli, Bull. de Soc. Lanc. de Osp. Roma, 1889-90, Vol. 10, p. 35. Female, 34 years. Acute gangrene; duration one month. Septicemia following ovariotomy; right base axillary line. Resection of fifth and sixth ribs in axillary line, puncture cavity 1½ cm. deep, irrigation of cavity, syncope, tamponade. Death fourteen hours later, coma

[65] Lancet, Jan., 1894, p. 87.

[66] Cong. Inter. Med., Copenhagen, 1884, Vol. vii, p. 146.

[67] Würtzberg, Aschaffenberg, 1888, Schippner, W. & C.

[67] Lancet, London, 1892, p. 776.

left hemiplegia. Necropsy: Embolism of sylvain artery, thrombosis of a pulmonary vein.

Case 32, 1889. Freiberg, Meditzina, St. Petersburg, 1889, Vol. 1, No. 50, in Chictuertink, 1894, p. 763, Observation 41. Male, 26 years. Fetid abscess with hemoptyses; two months duration. Acute frank pneumonia; left base posteriorly. Signs of cavity; doubtful adhesions. Incision internal to the lower angle of the scapula; resection of the sixth rib, pelves thickened where there has been applied a paste; enlargement of the opening with the cautery, cavity 3 cm. deep, into which the bronchi opened, drainage and iodoform gauze. Death sixteen days later, septicemia. Necropsy: Purulent and hemorrhagic pleurisy, septic lobar pneumonia, multiple adhesions, the cavity the size of a fist.

Case 33, 1889. Ramsay, Annals of Surg., 1889, Vol. 2, p. 144, and 1890, Obs. 2. Male, 25 years. Gangrenous abscess; four weeks duration. Injury by forearm of thorax and lungs; axillary region and anteriorly. Signs of cavity; adhesions. Thoracotomy, resection of the second, third, fourth, fifth, sixth and seventh ribs, pneumotomy, issue of pus and of débris of garments. Recovery.

Case 34, 1889. Smith, S. C., Lancet, 1889, Vol. 2, p. 113. Female, 39 years. Gangrenous abscess; duration five weeks. Pneumonia for three weeks; right base posteriorly. Signs of cavity; adhesions. Exploratory puncture at the angle of scapula without result. Incision without rib resection at lower angle of scapula, dilatation of a focus opening of a small cavity. Recovery with fistula in four weeks.

Case 35, 1889. Von Openschouski, Zeitschrift für Klin. Med., Berlin, 1889, xvi, 393 and 398; Male, 30 years. Lung abscess and gangrene, three weeks after onset coughed up cup of fetid pus, no tubercle bacilli; four months duration. Exposure and cold; right side middle lobe. Signs of cavity; pleural adhesions; Negative puncture on right side, repeated punctures a week later give negative results. Incision between mammillary and hind axillary line over fifth and sixth ribs were excised to extent of 10 cm.; opened directly into lung with thermo-cautery, at depth of 2 or 3 cm. cavity was opened, patient coughed and emptied out of wound a greenish, fetid pus; lining of cavity suspended with fingers, cavity irrigated with dilute potassium permanganate sol., drainage and antiseptic packing, wound irrigated twice daily at first and daily later. Recovery; patient discharged as cured seven months after admittance.

Case 36, 1889. Walsham (Symonds), St. Bartholomew Hosp. Reports, 1889, Vol 25, p. 253. Male, 33 years. Acute gangrene; seven weeks duration. Pneumonia, aspiration of material (submission); left base posteriorly. Rib resection, drainage and irrigation. Improvement; death five weeks after, hemoptysis from the pressure of the drain. Necropsy: Cavity diminished in size.

Case 37, 1890. Anderson, Am. Pract. and News, Louisville, 1890, Vol. 10, p. 10. Male, 32 years. Gangrene cavity; forty-five days duration. Pneumonia; lower lobe. Puncture in sixth interspace, one inch behind axillary line, pus. Incision two inches long over seventh interspace, one inch behind axillary line, down to intercostal muscles; inserted trocar five inches long, blood; inserted needle and obtained pus; reinstated trocar into cavity and drew off one pint pleurant matter; dilated opening with forceps, introduced rubber tube, irrigated next day, some fluid passing into trachea. Recovery; cough ceased.

Case 38, 1890. Ramsay, Annals of Surg., 1890, Vol. 2, p. 34. Male, 32 years. Gangrene. Acute pneumonia; right base posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision and resection of 3 cm. of seventh rib, puncture incision above the trocar with the bistoury and forceps, issue of gangrenous liquid, drainage. Recovery in six months, the drain removed the seventh day but was replaced on account of retention, no fistula.

Case 39, 1891. Fenger and Hollister, Münch. Med. Woch., 1891, p. 8. Male, 34 years. Gangrenous abscess. Suppurating hydatid cyst; lower lobe. Signs of cavity. Exploratory puncture. Incision of the third interspace anteriorly, counter-opening in fifth interspace in axillary line. Recovery in six weeks.

Case 40, 1891. Krecke, Münch. Med. Woch., 1891, Vol. 38, p. 399. Male, 20 years. Gangrene of lung, purulent pleurisy. Stricture of esophagus from alkali poisoning, unable to pass tongue; right side empyema and gangrene lower lobe. Esophagotomy, external resection of ribs for empyema; gangrenous area was opened, cavity discovered the size of a chicken's egg. Patient died six hours later.

Case 41, 1891. Krecke, München Med. Woch., 1891, p. 399. Female, 15 years. Gangrene. Stricture of the esophagus, treatment by esophagotomy; right base posteriorly. Pneumotomy. Death from exhaustion. Necropsy: Multiple abscesses in the left lung, the right cavity cicatrizing.

Case 42, 1891. Porter, Journal of Am. Med. Ass'n., 1891, Vol. 16, p. 335. Young female. Gangrenous abscess. Grippe after confinement; left base. Signs of cavity; adhesions. Incision and rib resection, irrigation, drainage. Complete recovery.

Case 43, 1891. Ochler, München Med. Woch., 1891, p. 713. Male, 30 years. Chronic gangrenous abscess; two years and seven months. Pleuro-pneumonia two years previously, expectorate gangrenous and hemoptoic; left base posteriorly. No signs of cavity except for one month; no adhesions. Resection of the seventh rib, pneumothorax; the operation abandoned; drainage of the pleura, pneumothorax absorbed within a few days; four weeks later a new incision at the same point and depth of 5 cm. in the lung; the cavity opened spontaneously into the liver, two days later drainage. Recovery, purulent fistula one and a half years later; the patient has been troubled since his fistula closed (fetid sputum fever).

Case 44, 1891. Porter, Journal Am. Med. Ass'n., 1891, Vol. 16, p. 335. Male, middle-aged. Gangrenous abscess; left base. Signs of cavity, abscess contains gas; adhesions. Incision and rib resection, irrigation, drainage. Complete recovery.

Case 45, 1891. Thue, Nordiski-Magaz., 1891, p. 771, in Johnesbericht, 1891, Vol 11. p. 445. Male, 37 years. Gangrene. Acute bronchitis and double pleurisy; right apex; partial adhesions, insufficient. Resection of the third and fourth ribs, lungs fixed in the incision by sutures because of the insufficiency of the adhesions. Purulent pleurisy, death three and a half months later. Necropsy: Purulent pericarditis.

Case 46, 1892. De Cerenville and Roux, Rev. Méd. de la Suisse, Romande, 1892, p. 233. Male, 53 years. Acute gangrene; four weeks duration. Bronchiectasis; left base anteriorly and in axillary line, disseminated foci. Signs of cavity. Pneumotomy in extremis, resection of fifth rib, axillary line opening with a cautery, a large cavity. Death a few hours later Necropsy: Bilateral bronchial dilatations, gangrenous cavity of left base.

Case 47, 1892. De Cerenville and Roux, Rev. Méd. de la Suisse, Romande, 1892, p. 229. Male, 18 years. Acute gangrene; eight weeks duration. Grippe in 1889; bronchitis; right base posteriorly. Signs of cavity; partial adhesions. Puncture, serous fluid. Resection of 6 cm. of ninth rib, partial pneumothorax, lung grasped with forceps, immediate suture of two pleuræ; purulent pleurisy eight days later; puncture, pus; pleurotomy sixteen days later complete pneumothorax, second pleurotomy. Recovery; seen nine months later, cured with excavation.

Case 48, 1892. De Jersey, W. B., Lancet, Vol. 1, 1892, p. 21. Child 21 months. Gangrene of lung; six weeks duration. Pneumonia, history phthisis, left side. No signs of cavity positive; pleural adhesions. Puncture in left chest rib, sixth space, axillary line, and in same space to angle of scapula, pus was withdrawn. Incision in sixth space between post and mid-axillary lines, one dram of pus of fetid odor escaped; temperature fell after operation. Death three days after operation. Necropsy: Left lung solid, tubes thick and containing pus, scattered particles of gangrene; bronchitis.

Case 49, 1892. De Beurman, same. Female, 12 years. Gangrene. Broncho-pneumonia or suppurative interlobar pleurisy; middle lobe of right lung. Signs of cavity. Resection of fifth and sixth ribs, incision with thermo-cautery through 3 cm. of lung tissue, large drain, irrigation. Recovery.

Case 50, 1892. Delagruien, Cong. Trans. de Chir., 6, 1892, p. 583. Male, 37 years. Gangrene of lung; ten months duration. Fall upon chest; base of left lung. Trocar finds pus, puncture at level of ninth rib. Resection of seventh, eighth and ninth ribs in their entirety from posterior angle, opening of abscess, escape of one-half liter of greenish, fetid pus, irrigation of cavity with 1 oz. Cl., 1 to 2000, drainage. Recovery; drainage tube removed twenty-seven days after recovery; fistula.

Case 51, 1892. Hagen, Thomwratch, 1891, and Meditzina, St. Petersburg, 1892, Vol. 4, p. 455. Male, 32 years. Gangrenous abscess. Fibrinous pneumonia; right base anteriorly. No signs of cavity; adhesions. Exploratory puncture, fetid pus. Incision of 5 cm. in the fourth interspace. Recovery in one month.

Case 52, 1892. Monod, Soc. de Chirurgie, 1892, p. 578, and 1895, p. 32. Male, 48 years. Acute gangrene; twenty days duration. Pneumonia, two months duration; left base posteriorly. Signs of cavity; adhesions (not diagnosticated). Exploratory puncture in ninth interspace negative, puncture in eighth interspace positive. Pneumotomy without rib resection at the level of eighth interspace, abscess situated at depth of 10 cm. Recovery in one and a half months.

Case 53, 1892. Perier and C. Paul, Bull. Acad. de Méd., 1892, Vol. 27, p. 376. Male, 58 years. Gangrene; four months duration. Bronchitis and gangrenous septicemia seven months previously; left apex. Signs of cavity, loose adhesions. Incision in the second interspace, focus and depth of 5 cm. containing 60 c.c. of pus, drainage (naphthol camphor). Recovery in fifty days.

Case 75, 1893. White, Medical News, 1893, Vol. 62 p. 38. Female, 30 years. Chronic gangrene (first focus), second focus three and a half months since; three and a half months duration. Old infectious pneumonia, acute pleuro-pneumonia; right base anteriorly and posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision in sixth interspace, two ounces of fetid pus, irrigation, drainage; incision of rent in post-axillary line sixth interspace, issue of several ounces of fetid pus and fragments of gangrenous lung. Cured, two months drain removed, cured in eight months; observed two years after, cured.

Case 54, 1893. Hofmakl, Wiener Klin. Woch., 1893. Male, 25 years. Gangrenous abscess, putrid bronchitis; one month duration. Bronchitis, left apex anteriorly. Signs of cavity; adhesions. Incision in the second interspace, cavity not opened; six days later resection of 8 cm. of third rib; puncture of lung, at third puncture issue of air and secretion upon dilatation of tract; hemorrhage arrested by tampon. Recovery in one and a half months without fistula.

Case 55, 1893. Tizebicky, Wiener Med. Woch., 1893, Nos. 21 and 22. Male, 58 years. Chronic gangrenous abscess; three months duration. Traumatic pneumonia three months previously; right base anteriorly. Signs of cavity; adhesions. Exploratory puncture. Resection of the fourth rib (4 cm.); two days after the puncture opening of a gangrenous cavity. Death sixteen hours later.

Case 56, 1894. Grube, in the Clin. Viestinik, 1894, p. 63, observation not published. Male, 42 years. Gangrenous abscess, no bacilli of tuberculosis; two years duration. Fibrinous pneumonia; right upper lobe anteriorly, thorax retraction. Signs of cavity; adhesions. Incision in second interspace; exploratory puncture with hypodermic needle, issue of pus; incision of parenchyma with cautery to depth of 6 cm., small, insignificant cavity; five days later the larger cavity opened spontaneously through the incision, no drainge, strand of gauze. Recovery; he left hospital one and a half months later with a wound on its way to cicatrization.

Case 57, 1894. Habershou, Lancet, 1894, Vol. 1, p. 1012. Male, 32 years. Gangrene of lung; six months duration. Syphilis; left apex and right base, advanced toward bases. Signs of cavity; pleural adhesions. Positive puncture. Portion of rib resected, but little pus obtained. Patient died a short time after operation. Necropsy: Right lung firmly adherent posteriorly, pleura thickened, extreme apex fairly healthy, though emphysematous; posterior two-thirds of lung a series of red eating cavities; in left lung broncho-pneumonia, gangrenous patch; tubercle bacilli found, also giant cells.

Case 58, 1894. Priestly, Teck, Lancet, Vol. 1, p. 87. Male, 22 years. Chronic abscess complicated with secondary gangrene; four months duration. Pleuro-pneumonia, six months duration; left side anteriorly. No signs of cavity; adhesions. Incision in third interspace; multiple punctures (5), negative puncture in second interspace, the second puncture brought pus; incision with the trocar; dilatation with the forceps of Lister, pus, drainage. Recovery after having hemoptyses twice during convalescence; complete recovery six months after.

Case 59, 1894. Mackay, Inter Col. of J. F. M. and S., Melbourne, 1894. Vol. 1, p. 52. Male, 12 years. Gangrenous abscess, hemoptysis; Several days. Acute pulmonary affection of five weeks duration; no diagnosis; right base antero-laterally. No signs of cavity; adhesions. Puncture negative. Incision below the lower border of the scapula; resection of two ribs, adhesions; multiple punctures in all directions, at last upon finding a small cavity the size of a walnut containing gangrenous débris, this cavity was incised. Death, hemoptysis. Partial Necropsy (lung only): The upper lobe normal, the lower and middle lobes adherent; a cavity, the size of an orange opened, separated by thicknesses of 3 mm.; five or six other small abscesses of lower lobe, abscess of the middle lobe.

Case 60, 1894. Rodman, Am. Prac., Louisville, May 5, 1894, in Chir. Am., 1895. Young male. Acute gangrene. Infectious pneumonia following a fracture of the ribs. Incision and resection of sixth rib twenty days after the accident (four inches), pus and pulmonary débris; repeated tamponade. Recovery.

Case 61, 1894. Rochet, no date, given immediately under another dated May, 1894. Local gangrene. Resection. Recovery.

Case 66, 1894. Rochet, Inaug. Dissert., Kiel, 1894. Male, 28 years. Gangrenous abscess, gangrenous pneumonia; three weeks. Old bronchial dilatations; third interspace anteriorly, right base posteriorly. Signs of cavity; no pleural adhesions. One puncture in the ninth interspace negative, one puncture in the third interspace anteriorly positive. Application of a paste of chlorid of zinc; resection of 3½ cm. of the third rib; spontaneous opening of the cavity ten days later; ten weeks later the same operation posteriorly at level of fifth rib, opening of cavity on seventh day. Death two days after opening second cavity. Necropsy: Old bronchial dilatation, broncho-pneumonia cachexia; the patient improved after first operation, failed after second

Case 62, 1895. Bazy, Soc. de Chirurgie, 1895, p. 69. Male, 20 years. Gangrene; right base; partial adhesions. Incision 10 cm. long parallel to the ninth rib, which is resected as well as the eighth (6 cm.); digital exploration through a small opening in pleura, adhesions above the incision, second incision above the first; pleural adherent gangrenous focus, 12 cm. deep. Cured in twenty days. Death three or four months later from epilepsy.

Case 63, 1895. Harrison, in Quincke Mittheil Aus. den Greug., 1895, Vol. 1, p. 101, table 1 b, observation 1. Female, 27 years. Gangrenous abscess; six days duration. Pulmonary embolism following puerperal fever of three weeks standing; right base posteriorly. No signs of cavity; adhesions. Exploratory puncture. Resection of four cm. of the ninth rib, opening of the cavity containing 300 c.c. of pus. Death three days later. Necropsy: Pyemia.

Case 64, 1895. Krause, Berliner Klin. Woch., 1895, p. 347. Male, 36 years. Chronic gangrene; nine months duration. Infectious pneumonia; left base posteriorly; no adhesions. Resection of 12 cm. of ninth and tenth ribs, opening of the pleura; the upper lobe retracted, the lower lobe adherent to the thorax, tamponade with iodoform gauze; five days later sufficient adhesions except at one point (above); opening of the cavity, cavity the size of an apple, gangrenous fragments of lung, two drains. Recovery; the bronchial fistula closed twenty-five days later; three and a half months later cured a little roughness of respiration, and amplitude of thorax slightly diminished.

Case 65, 1895. Krause Berliner, Klin. Woch., 1895, p. 347. Male, aged 33 years. Purulent pleurisy; gangrenous abscess(?); three months' duration. Bronchitis and right side pleurisy; right base anteriorly; adhesions. Resection of fourth and fifth ribs in the maxillary line; pulmonary fistula; pneumotomy; at 2 cm. we come upon a cavity the size of an egg; tamponade. Recovery; left the hospital three weeks after the operation, wound healing.

Case 67, 1895. Podieze, Rev. Gende Chir. et de Ther. Jour. des Praticiens Paris, Nov. 19, 1895. Gangrene of left lung. Incision 12 cm. long from above down in left subclavicular region; excised 3 cm. of second and third ribs; sutured pleural transverse incision in lung; fetid pus escaped; walls of cavity swelled; irrigation with Thiersch sol.; iodoform tampon. After third dressing pus lost fetor. Wound healed in three weeks. In forty-five days after operation patient had gained thirty-one pounds.

Case 68, 1895. Quincke, Mittheilunzen ano der Grez geb den Medici und Chir., 1895, Bd. 1, H. T. 1, obs. 6, p. 25, and Tab. 2, observation, 8, pp. 30-31. Male, aged 34 years. Chronic putrid abscess; duration one and one-half years; pneumonia complicating grip; left base and the axillary line; signs of cavity; adhesions. Resection of the third rib in the axillary line anteriorly; opening of cavity. Death one and one-half hours later. Necropsy: Several cavities if only opened; death from exhaustion; recent gangrene in right; pleural exudate in the right.

Case 69, 1895. Quincke, ibid., Bd. I, H. T. I, Tab. 1, observation 6, pp. 10 and 11, and obs. 1, p. 8. Male, aged 33 years. Acute gangrene (gangrenous abscess); duration four weeks; acute pneumonia two and one-half years; right base posteriorly; signs of cavity; adhesions. Exploratory puncture; issue of pus. Resection of eighth, ninth and tenth ribs (6 cm. in the scapula line); H-shaped incision at level of ninth rib; two sutures of lung to the pleura; multiple exploratory punctures without result; three days later a purulent fistula formed; opening enlarged with the cautery; five days later rib resection; drainage. Recovery in six weeks; completely cured in two months.

Case 70, 1895. Quincke, ibid., 1895, Bd. I, Ht. I, obs. 5, p. 23 and Tab. 2, pp. 28-29. Male, aged 39 years. Chronic gangrenous abscess with secondary bronchiectasis; duration ten months; left base posteriorly; signs of cavity; partial adhesions ascertained by the puncture. Exploratory puncture in fifth interspace, axillary line; pus, sero-sanguinous fluid. Application of paste of chlorid of zinc; resection of 3 cm. of sixth rib fourteen days later; puncture; pus; opening of the cavity with cautery. Death three days later. Necropsy: Sero-purulent pleurisy; encysted in the left; multiple cavities; chronic meningitis.

Case 71, 1895. Tuffier, Soc. de Chir., 1895, p. 769, obs. 1. Male, aged 59 years. Acute gangrene, fifteen days duration. Infectious pleuro-pneumonia of forty-five days' duration; right base in axillary line; signs of cavity; no adhesions. Incision in sixth interspace without rib resection; complete pneumothorax; total retraction of the lung; impossible to open the lung; drainage of the pleura. Recovery.

Case 72, 1895. Tuffier, Ibid., 1895, p. 767, obs. 5. Female, aged 19 years. Gangrene of three months' duration. Acute pneumonia and pyemia since three and one-half months; right apex anteriorly; signs of cavity; partial adhesions. Incision at level of third interspace; no adhesions at this point; separation of the parietal pleura adhesions at the level of second rib; resection of 5 cm. of this rib; pneumotomy; opening of a cavity the size of head of fetus; tamponade. Death fifteen days later; meningo-encephalitis. No necropsy at the time of operation; the patient presented the accidents of gangrenous embolism of the sylvan artery; this suddenly the same day as the pneumotomy and as the trephining of the head.

Case 73, 1895. Tuffier, Ibid., 1895, pp. 676 and 769, obs. 4. Male, aged 60 years. Acute gangrene of six weeks duration. Pneumonia; right base posteriorly; no signs of cavity; partial adhesions. Incision in eighth interspace; separation of the parietal pleura adhesions at level of the seventh rib; resection of seventh rib; opening of a cavity the size of a fetus head; tamponade. Death six days later; cause, hemoptysis. Necropsy: Hemorrhage in the center of the cavity; no pleurisy or pneumothorax.

Case 74, 1895. Tuffier, Ibid, 1895, p. 771, obs. 5. Male, aged 41 years. Acute gangrene of three weeks duration. Pneumonia of four months; right base anteriorly; signs of cavity; adhesions. Incision below the fourth rib within the nipple; no rib resection. Death five days later; hemoptysis. No necropsy.

Case 76, 1896. Duret, Arch. de Medicine, 1896, Vol. 1, p. 67. Female, aged 21 years. Chronic gangrene of the lung. Old bronchiectasis; right base posteriorly; signs of cavity; positive puncture. Rib resection (three ribs), 7 to 8 cm.; incision of the pleura; pneumotomy; opening of a cavity the size of a hen's egg, into which opened two bronchi; cauterization; drainage. Amelioration; recurrence nine months later; curettage of the cavity; counter-opening; drainage; fistula resulted, which was operated on with success four years later. Complete recovery two and one half years after last operation.

Case 78, 1896. Meakin, Brit. Med. Jour., 1896, II, p. 746. Female, aged 31 years. Probable gangrene of pleura and lung of a few days' duration. Acute pneumonia; adhesions. Sixth and seventh ribs resected in anterior axillary line, one-half inch from each; pleural cavity opened; grayish-black very fetid fluid escaped from lung; did not collapse; lung was hard except one spot, which was doughy; in this spot a forceps was plunged, followed by a drainage. Distress diminished steadily; recovery after first few hours; discharge dark red, tarry quality, becoming like pus; discharge after first four days was not fetid.

Case 79, 1896. Phillips and Nash, Lancet, 1896, Vol. 21, p. 1454. Male, aged 36 years. Acute gangrene of one month. Pluro-pneumonia; right base in axillary line; no signs of cavity; adhesions. Exploratory puncture; pus, blood, débris. Incision in the sixth interspace; resection of one and one-half inches of sixth rib; gangrenous cavity; débris of neurotic lung; irrigation; no improvement; one month later resection of seventh and eighth ribs, two inches (posterior axillary line); numerous exploratory punctures without result; no cavity. Recovery fourteen months; purulent discharge through the wound at several relapses; drain one year; hemoptysis thirteen months after the operation. Complete recovery; seen four years later.

Case 80, 1896. Smith and Treve, Lancet, 1896, Vol. 2, p. 532. Male, aged 40 years. Gangrenous abscess of one and one-half months. Acute pneumonia; between inner border of scapula and spine; no signs of cavity; adhesions. Negative exploratory puncture two days before operation. Incision and resection of rib; opening of a small abscess. Recovery, but later relapse and formation of a second abscess at the site of the first, which is opened and drained.

Case 81, 1896. Smith and Treves, Ibid, p. 522. Male, aged 45 years. Fetid gangrenous abscess of four months duration. Pleuro-pneumonia; posteriorly below the angle of the scapula; signs of cavity; partial adhesions. Incision and rib resection; exploratory puncture negative; cavity the size of a cricket ball; pleura not adherent at the base; protected with tampon. Death twelve days after a second cavity containing 250 grams was discovered. Necropsy: A right pneumonia and cachexia.

Case 82, 1897. Andrews in Morillon These de Paris, 1897, p. 71, observation 2. Male, aged 42 years. Gangrenous abscess of fourteen weeks' duration. Pneumonia; left base anteriorly and laterally; no signs of cavity; adhesions. Resection of 8 cm. of fifth rib in axillary line; puncture; pus 8 cm. deep; incision and curettage of cavity; during the operation syncope caused by an embolism of lung tissue. Improvement; the patient was lost sight of before recovery was complete.

Case 83, 1897. Andrews in Morillon These de Paris, 1897, p. 75, obs. 5. Male, aged 24 years. Gangrenous abscess of two years' duration. Pneumonia; left lower lobe; signs of cavity; adhesions. Resection of 2 cm. of two ribs in axillary line; incision of lung with the bistoury; cavity 4 cm. deep, contained necrotic lung tissue; iodoform dressing. Rapid recovery. Death two years later; cerebral syphilis probable cause.

Case 84, 1897. Bazy, Soc. de Chirurgie, 1897, p. 67. Gangrene; adhesions. Pneumotomy; extraction of 32 grams of shreds of pulmonary sloughs. Result unknown.

Case 86, 1897. Jagle et Raffray in Morillon th. Paris, 1897, p. 105, et Soc. Aust., 1893. Female, aged 41 years. Acute gangrenous abscess, putrid expectorate; thirteen days duration. Acute frank pneumonia six weeks before; right base posteriorly; signs of cavity; adhesions; two negative punctures. Incision in the eighth interspace (cocain anesthesia); puncture of the pleura negative; incision; a violent cough brings forth two to three spoonfuls of fetid pus; irrigation with sublimate provokes violent cough; issue through the wound; two pulmonary sloughs; two drains. Improvement for three days; death the fourth day. Necropsy: Cavity in the right lower lobe posteriorly, into which many bronchi open.

Case 87, 1897. Lapujko, Soc. de Med. des Kiefin, Wratch, 1897, p. 173. Female. Gangrene; pneumotomy; cured several months.

Case 88, 1897. Lapujko, Ibid., Wratch, 1897, p. 173. Male. Gangrene; pneumotomy (several fragments of lung); recovery.

Case 89, 1897. Tejars, Soc. de Chirurgie, 1897, Feb. 17, and Gaz. Hebd. de Medicin et de Chirurgie, 1897, p. 181. Male, aged 50 years. Pulmonary gangrene with an arterio sclerosis and general paralysis. Few signs of cavity; partial adhesions, inextensive at the level of gangrenous focus. Resection of three ribs, fourth, fifth and sixth; pleuro-parietal separation; incision of the pleura; lung held with forceps and explored; opening of a cavity the size of a hen's egg at depth of 1.5 cm.; suture of lung to parietal pleura. Death two days later from exhaustion. Necropsy: No other gangrenous cavities.

Case 90, 1897. Tejars, loc. cit. Male, aged 33 years. Pulmonary gangrene, acute, eight days' duration. Infectious broncho-pneumonia of two months; right base posteriorly; no signs of cavity; loose partial adhesions. Incision; separation of the pleura; pneumotomy at a point; adhesion; the cavity not found. Death of infection two days later. Necropsy: The cavity is located in the apex; cavity also at the base.

Case 91, 1897. D. M. Moie, London Lancet, 1897, Vol. 1, p. 105. Male, aged 23 years. Gangrene of lung of forty-five days' duration. Acute pneumonia of left lung; adhesions. Horizontal incision two inches long in fifth interspace of left side; escape of fetid fluid and débris; drainage tube; tube removed three weeks after and wound closed one month after. Complete recovery.

Case 92, 1897. Welkowitch, Soc. de Med. de Kieff in Wratch, 1897, p. 175. Male, aged 35 years. Acute gangrene of one month duration. Pneumonia, but no bacilli of Koch; right base anteriorly; signs of cavity; adhesions. Resection of 6 cm. of fifth rib; opening of a cavity, long and narrow, counter-opening posteriorly at the ninth rib, which leads to a pocket the size of an infant's head; these two cavities are separated one from the other. Probable recovery.

Case 93, 1897. Northrupaud Medicle, N. Y. Med. Jour., Jan. 14, 1897. Female, aged 33 years. Gangrenous abscess of three months' duration. Pleuro-pneumonia; influenza; fetid bronchitis; right base anteriorly; no signs of cavity; partial adhesions, absent anteriorly. Puncture at level of third interspace at the axillary line; many punctures below nipple without result. Incision and resection of sixth rib (3.5 cm.) in the axillary line; partial pneumothorax (not alarming); puncture of the lung; pus at depth of 2 cm.; incision with the scissors; three ounces of pus and gangrenous fragments of lung; second abscess above the first also opened. Recovery; frequent hemoptysis during convalescence; wound completely closed in three months; no hemorrhage; no irrigation; drainage. After nine months acute extension with fetid expectorate at this time; recovery without intervention.

Case 94, 1897. Pitts, London Lancet, Vol. 2, p. 915. Child, aged 4 years. Gangrenous abscess of six weeks' duration. Caseous mediastinal glands; left side; pleural adhesions. Rib resected; exploration failed to reveal cavity in lung. Death nine weeks after operation. Necropsy: Caseous bronchial glands, which had opened into esophagus and left bronchus tubercular glands of neck and mediastinum.

Case 95. Pitts, London Lancet, Vol. 2, p. 915. Child, aged 5 years and nine months. Breath fetid, temperature high; hemoptysis had occurred. Caseous mediastinal glands; posterior part of right lung; signs of cavity; pleural adhesions. Exploratory punctures through incision failed to reach cavity. Excision of sixth and seventh ribs in right interscapular region; lung adherent. Child collapsed and died several hours after operation. Necropsy: Caseous abscess cavity size of walnut at root of right lung, opening into right bronchus; caseous glands close to abscess; no signs of tubercle; several patches of gangrene apart from abscess cavity.

Foreign bodies.—The subject of foreign bodies in the bronchi is treated here after abscess and gangrene, as they frequently result in abscess and gan-

grene. A great variety of foreign bodies have been aspirated or thrown into the bronchi. The most common variety, in America at least, as taken from the statistics of Dr. Weist, who collected over a thousand cases (Trans. Am. Surg. Ass. 1881), is a grain of corn; in frequency this variety is followed by inhalation of the various seeds, as melon, pumpkin, orange, etc., beans, buttons, pebbles and marbles. The effects produced by these foreign bodies on the lung may be divided into primary and secondary. The primary are the dyspnea, pain and coughing; the former may be mild or intense, even to death, depending on the size and location of the body; the pain is usually very severe, and is often a guide to the location of the body; the coughing is persistent, and is often associated with pain. If the body be smooth and of regular outline it may prevent the admission of air to a lobe or even to an entire lung, and by the frequent efforts of coughing and the ball valve action of the body, the lung may be emptied of air and inspiration made painful and distressing; the foreign bodies are retained in their position, principally by the edema of the mucosa; occasionally by the swelling of the seed. Weist's statistics show that the seeds, for the number aspirated, do the least harm; they are the most difficult to find in operation, and therefore should not be operated except when especially indicated. The body may be arrested in the larynx, trachea, at the bifurcation or in a bronchus. Numerous statistics have been published to show that the foreign body has been arrested most frequently in the right bronchus. A comparison of all statistics shows that the arrest occurs in the right and left bronchus with almost equal frequency. The location of the foreign body can often be ascertained by the physical signs. We can at least determine which bronchus is occluded. We are now greatly relieved of the uncertainty of location by the assistance of the X-ray. Many methods have been suggested for the primary treatment of these cases: one of the best is taking advantage of gravity early in the case, *i. e.*, holding the patient by the feet, requiring him to cough as deeply as possible, and slapping the chest forcibly at the time of expiration; this often forces the foreign body out of the bronchus. In upward of 60 per cent. of the recorded cases the foreign body was expelled in this way; as many of these cases are never recorded or even come under a physician's care, it is certain that a much larger percentage recover by this method. Tracheotomy for foreign body has given very good results, but should not be practiced until other means have failed. When the tracheotomy was successful in the removal of the foreign body, the mortatity was 6 per cent. When unsuccessful 21.5 per cent. (Weist).

The secondary effects of foreign bodies in the bronchi are even more serious than the primary, as they induce infective processes—abscess, gangrene, bronchiectasis and tuberculosis, which terminate fatally. When it is a metallic or dense substance it can be readily located in a radiograph. The outlines of the abscess can also be defined by this means. G. A. Sutherland reports an instructive case of bronchiectasis, a sequence to an inhaled O'Dwyer tube. The bronchiectatic cavity was opened and the foreign body was not found. The patient died of hemorrhage about three weeks later. Postmortem showed the tube in the right upper bronchus. Multiple bronchiectatic cavities were found.

The following case illustrates the secondary effects of foreign bodies:

Case 1.—March, 1886, Katie M., aged 14, was brought to my office suffering from dyspnea and constant bronchial irritation, following the inhalation of a shelled peanut. It was believed to be in the bronchus of the middle lobe of the right lung; the inhalation was followed by consolidation of this lobe; the expectoration was not offensive, but sero-purulent, tinged with blood. Three weeks later, in a severe attack of coughing, the patient ejected the peanut. The expectoration from that time was scanty but continuous; it was not offensive; the consolidation did not disappear. Six months later she called at my office again; I found her suffering from an acute pulmonary tuberculosis. There was a cavity in the middle lobe of the right lung and bacilli were present in the sputum. Patient died two months later. No postmortem was made. I believe that the foreign body produced the *locus minoris resistentia* for the tubercular infection.

I recall a postmortem made during my interneship in 1879, in which a 6-penny shingle nail was the foreign body and the exciting cause of the tuberculosis. The literature on tuberculosis abounds with cases of this class, and the secondary results of foreign body in the lung must not be overlooked though the patient escapes the gangrene and abscess as earlier results.

The presence of a foreign body in the bronchus should be a source of great anxiety until it is removed. The method of its removal has offered fruitful material for speculation and experiment. Primary opening of the bronchus and trachea has been suggested and executed successfully, but the percentage of cases in which the foreign body has been found in the operation has been small, and the results of primary anterior or posterior bronchotomy or pneumotomy do not justify the operation although it often seems indicated. (Truc.) DeForest Willard made extensive and praiseworthy experiments on the removal of foreign bodies in animals, and came to the conclusion that bronchotomy for the removal of foreign bodies should not be attempted. Of 11 operations collected by Tuffier there were four immediate deaths, and in only one of the 11 was the foreign body recovered at the time of the operation. The other cases made only temporary recoveries or had fistulæ. The dangers of bronchotomy are, hemorrhage, pneumothorax and infection. From the results of operations and experiments we are not justified in operating for the removal of the foreign body *per se*. These cases should be carefully watched, and early intervention should be made when the secondary changes have taken place, as abscess and gangrene.

TUBERCULOSIS.

Tuberculosis of the lung has been considered a medical and not a surgical disease. In a few instances the surgeon has had the courage to open and drain tubercular cavities in the lung; in a still smaller number he has excised a portion of the lung for the removal of a circumscribed tubercular nodule. Wm. Koch suggested the injection of disinfectants and chemical irritants into the diseased portion of the lung, but they have been used to a very limited degree. With these few exceptions, the disease has been left entirely to the care of the physician. We ask ourselves, what has been achieved in tuberculosis? With the exception of a thorough knowledge of its etiology and pathology, comparatively nothing. We have volumes of literature on the subject, describing its various phenomena, course and terminations. From a sanitary standpoint, since Villemin in 1865 showed its infectious character and Koch dis-

covered the particular bacillus, we are possibly lessening the number of infected; from a therapeutic standpoint we had hoped, and still hope, that tuberculosis may be cured, alleviated or curtailed in its destructive effect by products derived from the tubercular bacillus under certain conditions. The results barely justify a continuation of the hope. Can surgery contribute anything toward the repair of tubercular lesions of the lung? It has accomplished much in the treatment of tubercular lesions of the articular and osseous systems; its results in the treatment of tuberculosis of the peritoneum have been little less than brilliant. The ideal treatment of tuberculosis is eradication; extirpation of the tubercular focus. In only a few instances has the surgeon been able to attack it so as to obtain this ideal result, as in cutaneous, synovial and osteo-tuberculosis. His best achievements have been obtained in cases where he merely placed the tissues under favorable conditions for repair by nature, as drainage of the peritoneal cavity with or without extirpation of the original focus of infection. This necessarily demands the consideration and reparative power of individual tissues when attacked by tuberculosis. Some tissues resist completely its invasion, as the fibrous tissue of tendons and fascia; others, when attacked never tend to repair, as tubercular ulcers of the intestine. In still others, as the peritoneum, the reparative power or resistance offered to the advancement of the disease is great. While a large percentage of the mortuary material is furnished by tuberculosis of the lung the statistics show more than an equal number in which the tuberculosis of the lung was completely cured or circumscribed and did not contribute in any way to the death of the patient. So common are the evidences of repaired, cured tuberculosis in the lung that the Germans have an axiom that every man at the end has a little tuberculosis. In 1000 necropsies, excluding 216 cases that died of phthisis, Osler found undoubted evidence of previous tuberculosis in 59 cases, 7.5 per cent., but Bollinger, Massini and Harris placed it very much higher, ranging from 27 per cent. to 39 per cent., far exceeding those that died of tuberculosis. Bouchard, in his report of postmortems, found that in over 75 per cent. of persons dying suddenly there was some evidence of tuberculous lesions, active or obsolete. A comparison of the postmortem evidences of repair of tuberculosis in the various tissues shows that the lung far exceeds any other tissue in the body, not excepting the peritoneum, in its ability to overcome the effects of tubercular inoculation. This repair is effected by the development from fixed connective tissue cells of resisting capsules of connective tissue with sclerosis and cicatrization of the walls of the cavities. These walls resist the biotic and toxic effect of the bacillus; subsequent degeneration of the encapsulated products takes place, or there is an elimination of the infected focus with its bacilli by necrosis and exfoliation, as illustrated after the use of the Koch tuberculin injections. Investigation shows further, that the so-called "deaths from tuberculosis" are rarely due to the tuberculosis itself, but to secondary infections, that is, it is not the tuberculosis which kills but the mixed infection (pus and sapregenic) of the tubercular centers; the same is true of tuberculosis in other tissues. Do postmortem examinations show us how the encapsulation of tuberculosis is favored or accomplished? Yes, to a limited degree. Does clinical experience, surgical or medical, offer any suggestions or proofs? Yes, both furnish many if they are properly interpreted. Tuberculosis of the lung is primarily in the great majority of cases a local disease involving but a small portion of one lobe of the lung. Ewart and Kingston Fowler described this process and showed that its extension followed well-defined routes. It advances from the original pulmonary focus by continuity, through the lymph spaces and lymphatic channels and through the blood, and rarely, if ever, along the mucous surface on which the myriads of bacilli are transmitted to the mouth. Pathology teaches us that the effect of the biotic and toxic stimulation of the bacillus is to produce lymphoid cells and a multiplication of the fixed and connective tissue cells of the part; they induce increased deposit of leucocytes and vascular changes, with subsequent necrosis and caseation of the center of the nodule. (Baumgarten.) In tissues containing epithelium these cells also proliferate and the connective tissue cells yield epitheloid and giant cells. (Gaule and Arnold.) Further, the tendency in most tissues in the body is to wall in the destructive process by the formation of a capsule. Tubercular lesions represent reaction of the tissues to the irritation of the tubercle bacillus. In the center of the foyer the irritation is sufficient to destroy the tissues; farther off the irritated tissues build a wall, which in time, makes a cicatricial barrier, plugging up lymphatics and constricting vessels. Leucocytes and wandering cells are attracted by dead bacilli. Living bacilli stimulate connective tissue alone. (Evans.) We have still further abundant proofs that this capsule is destroyed or lessened by secondary infections; that its limiting power is enhanced and favored by physiologic and anatomic quiescence. Its strength and resistance are further favored by aseptic stimulation of cell proliferation in its periphery. The study of the literature on repaired tuberculosis of the lung shows that there was an atelectasis and cicatrization of the pulmonary tissue in close proximity to the nodule; that there was a fibrous and cicatricial development often in the entire lobe which was repaired; that the pleura in the neighborhood of repair was greatly thickened, and effectually immobilized the lung contiguous to it; that the chest wall was contracted and motion of the diseased part was restricted. In other words, the histology of the repair of tuberculosis of the lung in its entire range, from the solitary tubercle to a complete lobe, is made up of a series of defunctionalizing processes, anatomic and physiologic, in every tissue involved directly or indirectly.

Treatment.—Hiller, Berlin, hoped to aid the cicatrization and contraction of the lung by the injection of irritating material into the lung itself, as iodin, iodid of potassium and carbolic acid. His method was tried by Ewald, Pepper and Jablovoski; they failed to obtain good results. Lepine injected sublimate solution into pneumonic lungs and observed a rapid diminution of temperature and improvement in breathing. Contraction of the chest wall for the cure of tuberculosis by means of cauterization of the chest was practiced by Guerin and Vidal. They reported 37 good results in 44 cases. Mosler tried this treatment in 20 cases and while he found great improvement in many he does not report a single cure.[68] Rive injected iodin and iodid of potassium into the cavities

[68] Verhand. des Cong. f. Innere Med., Wies., 1883, vols. i–ii, p. 82.

with only temporary relief; he had one fatal result from cerebral embolus.

The pathology of repair of pulmonary tubercular cavities involves certain physical conditions which are peculiar to the chest (they exist to a certain degree in abscess of the bone and brain), namely, the constant resistance of the bony framework against contraction, the effort at expansion of the cavity in each inspiratory act. The best illustrations exist in large empyemic cavities. The bony framework of the chest wall admits of a certain degree of contraction of the cicatricial tissue which makes up the boundary of the empyemic cavity, and then contraction ceases and the cavity remains permanent; as shown in Fig. 20*a*. This element was overcome by the operations of Estlander, Schede, Delagéniere and their modifications, all based upon the same principle, reducing the bony resistance; all artificial means of allowing the obliteration of a cavity by cicatricial contraction and agglutination of its walls. This same resistance to nature's repair exists in every pathologic pulmonary cavity in addition to the ordinary abscess conditions. Allow the wall of the abscess to collapse, to empty thoroughly, and it will heal as other abscesses of the same pathologic character; this I believe is the keynote to the successful treatment of pulmonary cavities. How to overcome this resistance of the chest wall was a stimulus to my investigations in lung surgery and led to the hope that not only might pulmonary cavities be obliterated by permitting or forcing their collapse, but that primary tuberculosis might be encapsulated by mechanical immobilization of the diseased portion by collapse and enforced rest of the lung as a respiratory apparatus, thus allowing the cicatrization and encapsulation of the tubercular foci; in other words, that tuberculosis of the lung might be treated as we treat tuberculosis of the joints, by immobilizing and enforcing physiologic rest; by enforcing drainage of the secondary products through the bronchi and allowing the ulcer or cavity to heal.

Are we furnished any evidence from the record of postmortems that may be appropriated to support the principle that immobilization and physiologic rest of the lung is favorable to the healing of pulmonary tuberculosis and pulmonary cavities? Yes. 1. Lungs that have been severely involved in tuberculosis, empyema, pneumonia, gangrene or abscess when repaired show a contraction of the chest wall in proportion to the degree of tissue involved; 2. Lungs with tuberculosis that have been compressed by pleuritis exudates, usually sequences of the pulmonary tuberculosis, have repaired the primary tubercular focus during their quiescence; 3. Lungs that have been allowed to collapse following radical operations for the obliteration of empyemic cavities (tubercular in a large percentage of the cases) have healed.

That empyema is curative of tuberculosis of the lung in its early stage I believe can be readily proven. The great majority of empyemas in the adult is the result of primary pulmonary tuberculosis, 83 per cent.; in children tuberculosis is rarely the cause of empyema. In most of the post-mortems on chronic purulent tubercular pleurisy tubercular lesions of the lung or other organs are found, but these lesions are generally quiescent and localized. Empyema from tuberculosis never absorbs and rarely opens into a bronchus. It is a result of mixed infection of the primary tubercular nodule in the lung extending to the pleura. (Strauss.) Of 164 uncomplicated cases of empyema operated by Koenig, Cabot and Runeberg, 7 remained with fistu and were incomplete cures, 4 died, and 9 were l sight of before the cure was complete; all the othe recovered. This shows what a favorable termina empyema may have, and considering that it is s ondary to tuberculosis in a great majority of ca (83 per cent.) it speaks forcibly for its curative eff upon the lung. Whitney[69] says "the course of tub cular empyema is peculiarly benign." In 16 cases pleuritic, non-suppurative effusion, Netter fou bacilli in all. It is the prevalent opinion of patho gists that pleurisy from "cold" rarely if ever occu Strauss quotes from German authors that "simpl pleurisy is tubercular pleurisy, the true nature which is not recognized; tuberculosis is the us etiologic condition in pleurisy; one can say that represents the real cause in over three-fourths of t cases. Landonzy regards pleurisy from cold as ab lutely exceptional. Kelsch and Villard, who inves gated 16 cases, say that pleurisy is only a local ma festation of tuberculosis. Chauffard and Gomba inoculated the fluid from 20 simple pleuritic exudat in guinea pigs; 10 died of tuberculosis, the negati cases do not prove that they were not tubercul Every general practitioner recalls numerous cases tuberculosis of the lung resulting in empyema hydrothorax in which there was a complete recove of the tuberculosis when the empyema and hydr thorax were operated at the proper time. In consid ering the curative effect of pleuritic effusions up tuberculosis of the lung we do not include the ad vanced cases of tuberculosis in which one or mo lobes are honeycombed with the disease; here, o account of the consolidation of the lung, it is impo sible for the pleuritic effusion to produce collapse an compression of the cavities. When I began this lin of investigation I had hoped to find in the reports the great pathologic institutes detailed accounts the condition of the primary tubercular focus i the lung and prove my position by them; so far been unable to find this material, as the postmorte records at my disposal have been defective in th particular. I have called the attention of a numbe of pathologists to this point and hope shortly to b able to submit accurate descriptions of the tubercul process in the lung with empyema. I do not believ that the empyema or the hydrothorax is advantageou to the tubercular process: by an inhibitory pow exercised by the fluid or by a venous stasis, as sug gested by Fowler,[70] of Brooklyn, in his able article "Surgery of Intrathoracic Tuberculosis." On th contrary, from this standpoint it is detrimental, as i impairs the general condition of the patient. It in creases the immediate danger, but favors the ultima result. Nothnagel and Schrader do not remove the e fusions primarily. The force of numbers of operate cases of empyema with permanent cure of the primar tuberculosis of the lung carries conviction that th compression of the lung favors the reparative proces and in this way the pleuritic effusion is curative Quiescence of the lung greatly diminishes lymphati circulation and thereby lessens materially the likel hood of the propagation of the tuberculosis to th other parts (W. A. Evans), a fact of great moment as the tuberculosis is disseminated, from a practica standpoint, almost exclusively by the lymphatics The methods of obtaining pulmonary quiesence o

[69] Twentieth Century Practice of Medicine.
[70] Ann. of Surgery, 1886, xxiv, p. 591.

llapse are: 1. By permitting or forcing the collapse the lung by separation of the parietal pleura and rathoracic compression (extra-pleural pneumo-orax); 2, by removing the bony resistance and owing the collapse of the chest wall, thus favoring ntraction and cicatrization (thoracoplasty); 3, allow-g the lung to collapse by intrapleural injections of s or fluid. The third method appears to offer more an any of the others. We know that atelectasis the lung may exist for months, or even years, and e lung be again restored to its function, as shown by est's cases of six to eighteen months' compression th effusion, which were followed by immediate storation of the lung to full size after removing the id; 2, the treatment is simple and painless; 3, the tients will consent when the pathologic condition most favorable.

Good results were obtained in tubercular cavities ith thoracoplasty by a number of authors. De azenville and Sengler report recoveries from disease right apex. Baier reports a temporary recovery. tewart Tiday supplemented this operation with xternal compression with adhesive plaster. Coro-ilas and McEwan favor thoracoplasty.

I have performed the following operation for the urpose of allowing the lung to collapse over a tuber-ular cavity:

Case 1.—Stephen D., English, age 40, single, clerk, Cook County Infirmary, Surgical Ward 7. Family history: Tuberculosis caused death of mother, two sisters and two brothers. Has had tuberculosis for three years; is emaciated and anemic. The upper lobe of right lung is consolidated; has evidence of a large cavity extending from the first rib to the lower margin of the third with a transverse diameter of two inches; has marked cracked-pot sound; he expectorates two ounces of material with each seizure of coughing; râles over the upper portion of the right lower lobe behind and some râles over the upper lobe of the left lung; no evidence of consolidation in this lobe; tubercle bacilli present; patient had an evening temperature ranging from 102 to 102.5 degrees F. It was decided that he was not in a condition to drain the cavity, and a compression of the lung over the position of the cavity was determined upon.

Operation.—Jan. 9, 1898, chloroform narcosis. Immediately before operation the patient's temperature was 100 degrees, pulse 98, respiration 28; there was a frequent hacking cough. A U-shaped incision was made, beginning at the sternum and the second rib, extending down to the third and then three inches to the right and up again to the second rib; the skin and muscular flaps were elevated; subperiosteal resection of three inches of the second rib; the parietal pleura was detached from the chest wall for a considerable area downward and outward, so as to allow of a greater compression of the lung at that point. The flap was replaced and retained with a deep musculo-cutaneous suture. Very little chloroform was used, as the patient was somewhat cyanotic when the operation began; it was feared he might die on the table. He was placed in bed and rallied rapidly.

At 7 P.M. the day of operation pulse was 108, temperature 101, respiration 32; January 10, 8 A.M., pulse 98, temperature 99.2, respiration 30; slept five hours; cough more constant and less spasmodic with considerable expectoration. January 10, 2 P.M., pulse 100, temperature 99.6, respiration 27. January 10, 7 P.M., pulse 104, temperature 100.2, respiration 30. January 11, 8 A.M., pulse 102, temperature 99.2, respiration 30; slept eight hours. January 11, 8 P.M., pulse 104, temperature 100.2, respiration 52. January 12, A.M., pulse 94, temperature 99.4, respiration 32; slept nine hours. January 12, P.M., pulse 96, temperature 99.8, respiration 34. January 13, A.M., pulse 94, temperature 98.8, respiration 30. January 13, P.M., pulse 96, temperature 99, respiration 32. January 14, A.M., pulse 98, temperature 98.8, respiration 30; slept nine hours; marked improvement in cough and expectoration. January 14, P.M., pulse 100, temperature 99.4, respiration 34. January 15, A.M., pulse 88, temperature 98.8, respiration 32. January 15, P.M., pulse 90, temperature 99.4, respiration 34. January 16, A.M., pulse 84, temperature 98.6, respiration 32. January 16, P.M., pulse 86, temperature 98.4, respiration 33. January 17, A.M., pulse 88, temperature 98.4, respiration 24. January 17, P.M., pulse 90, temperature 98.4, respiration 24. January 18, A.M., pulse 84, temperature 98.4, respiration 22.

From this time on his temperature, pulse and respiration have been normal; there was primary union of the wound and great depression of the chest over the site of operation. The patient's expectoration has diminished more than half, and is of a light foamy character. His improvement was progressive. He has gained in weight and appearance. April 30 physical examination reveals an entire absence of râles and bronchial breathing on the right side; there is diminished respiratory sound over the seat of depression of the chest wall; no physical signs remain to indicate that a cavity had existed in this locality. On the left side there are râles extending down to the nipple. These physical signs were verified by Drs. George W. Johnson and W. A. Evans. The repair of the lung which has taken place can be seen in radiograph of the right lung; no cavity exists. If the lung in this case were involved to a greater degree I could have inserted my entire hand through the opening in the chest wall into the chest cavity and separated the lung from its adhesions to the wall and compressed it.

Examination July 8 shows that the tuberculosis in the right lung was entirely quiescent. There was not a râle to be heard; the cavity was obliterated; there were some râles over the upper lobe of the left lung and the upper portion of the lower lobe; the patient has had no fever and has had but little expectoration.

Dr. Alexander C. Weiner and Dr. James G. Berry examined this patient with me.

(To be concluded.)

SOCIETY PROCEEDINGS.

Association of American Medical Colleges.

Denver, Colo., June 6, 1898.

[From advance sheets of "Bulletin of American Academy of Medicine."]

The Association was called to order at 10 o'clock A.M., at the Albany Hotel, Denver, Colo., June 6, 1898, by Prof. JAMES W. HOLLAND of Philadelphia, President. The Secretary announced the following members present by delegates: Jefferson Medical College, Philadelphia; Cincinnati College of Medicine and Surgery, Cincinnati; St. Louis College of Physicians and Surgeons, St. Louis; University of Georgetown, Washington; Woman's Medical College, Baltimore; Columbian University, Washington; University of California, San Francisco; Willamette University, Salem, Ore.; Creighton Medical College, Omaha; University of Illinois, Chicago; Medical College of Indiana, Indianapolis; Woman's Medical College, Philadelphia; Detroit College of Medicine, Detroit; University of Louisville, Louisville; Hospital College of Medicine, Louisville; University of Colorado, Boulder; Baltimore Medical College, Baltimore; Kansas Medical College, Topeka; Kentucky School of Medicine, Louisville; University of Minnesota, Minneapolis; Arkansas Industrial University, Little Rock; University of Iowa, Iowa City; Keokuk Medical College, Keokuk; Medico-Chirurgical College, Philadelphia; College of Physicians and Surgeons, Boston; Omaha Medical College, Omaha; University of Denver, Denver; Illinois Medical College, Chicago; University of Southern California, Los Angeles; Milwaukee Medical College, Milwaukee; Barnes Medical College, St. Louis; Wisconsin College of Physicians and Surgeons, Milwaukee; Miami Medical College, Cincinnati; Fort Wayne College of Medicine, Fort Wayne; Syracuse University, Syracuse; College of Physicians and Surgeons, Baltimore; Rush Medical College, Chicago; Western Reserve University, Cleveland; Gross Medical College, Denver; Woman's Medical School, Northwestern University.

On motion, the President appointed the following committee to consider and report on the proposed amendments to the constitution: J. M. Bodine of Louisville, T. H. Hawkins of Denver and H. O. Walker of Detroit.

Prof. MONTGOMERY A. CROCKETT of Buffalo, N. Y., read an essay on "The Developing Method in Teaching Medicine." The subject was approvingly discussed by the following gentlemen, all of whom had slight modifications to suggest: Prof. Chas. G. Stockton of Buffalo, Prof. John Minney of Topeka, Prof. Dudley S. Reynolds of Louisville, Prof. A. Stewart Lobingier of the University of Colorado, Prof. Bayard Holmes of Chicago, Prof. John V. Shoemaker of Philadelphia, Prof. Ernest LaPlace of Philadelphia and Prof. H. J. Herrick of Cleveland.

Professor Crockett was called on to conclude the discussion, after which the Association adjourned until 2 o'clock P.M.

SECOND SESSION.

The Association was called to order at 2:15 P.M. by the President, Prof. James W. Holland. The Secretary read the minutes of the last annual meeting, held at Philadelphia, May 31 and June 1, 1897, which were approved. By request, the Secretary called the roll; twenty-seven colleges answered present by delegates.

The President called past-President James M. Bodine to the chair, and proceeded to read his address. The address was well received, and on motion the Secretary was ordered to publish it and furnish each member of the Association a copy.

Prof. JAMES M. BODINE, Chairman of the Committee on Constitutional Amendments, reported as follows: The amendment proposed for Art. III, Sec. 5, extending the required hours for a year's work to 800, is not a desirable change, and your committee respectfully reports against its adoption. The proposed amendment to Art. III, Sec. 7, by the addition of the following: "*A college not giving the whole four courses of the medical curriculum and not graduating students, but otherwise eligible, may be admitted to membership,*" is respectfully approved by your committee. On motion, the report of the committee was unanimously adopted and the amendment made part of the constitution.

Prof. DUDLEY S. REYNOLDS, Chairman of the Judicial Council, reported as follows: The University of Colorado having been, by recent decision of the courts, obliged to remove its medical department from Denver to Boulder, the question of retaining membership was presented to the Council. The chairman advised as follows: "If you keep your dues paid up, and send annually a representative to the meetings of the Association, your membership is continued until somebody shall prefer, in due form, written charges of violation of some part of the organic law of the College Association, supported by convincing evidence. I would advise you, however, to make no attempt to confer degrees until you are thoroughly equipped for the completion of the required courses of instruction." This advice was accepted, and by your recent action in amending the constitution, the institution is still in every way eligible to membership.

In answer to a communication of Aug. 7, 1897, addressed to Secretary Holmes by Prof. G. M. Waters, M.D., Dean of the Ohio Medical University, Columbus, Ohio, the Council rendered the following decision:

Aug. 20, 1897.

To the Ohio Medical University, Columbus, Ohio:

G. M. WATERS, M.D., Dean:—For answer to your communication of Aug. 7, 1897, addressed to Bayard Holmes, M.D., Secretary of the Association of American Medical Colleges, your attention is invited to the following decision of the Judicial Council in answer to your communication of Dec. 22, 1895: "III. The time requirements of the Association are fundamental," etc. Again, in answer to interrogatories of the Ohio Medical University, of Sept. 4, 1896, the Council decided that "the whole period of time devoted to college work by the student shall not amount to less than four collegiate courses in four separate years in 1899 and thereafter, nor less than three collegiate courses of not less than six months each in three separate years, prior to 1899.

"Second, you can not admit a man to the senior class who has attended but one course of college instruction, no matter how long since that course may have been taken. If he can establish the fact that he did attend one regular collegiate course in an accredited college, you may graduate him after two full courses in addition to that one which he has already taken, provided you do it before 1899. After that time he would be required to take three additional courses. The College Association does not recognize any period of time devoted to practice as equivalent to any part of the prescribed course of study, and can not grant advanced standing to any person upon any ground other than previous collegiate work performed in regular and systematic order."

You say three-course graduates are eligible to registration in Ohio until July 1, 1899. If this be true, the Ohio State Board lowers its standard beneath that of the College Association. No college in good standing can graduate a student in 1899 who has not attended four courses of graded instruction in four separate years, subject alone to the exemptions of Sec. 6, Art. III, of the constitution as amended at Philadelphia, May 31, 1897.

The Mr. Browning of Charleston, W. Va., a copy of whose letter accompanies yours of Aug. 7, 1897, can not now avail himself of the provisions of Sec. 5, Art. III, of the original constitution of the Association of American Medical Colleges, and you can not admit him for graduation on less than three courses of graded instruction in three separate years, prior to 1899, after which date you can not admit him to the degree of Doctor of Medicine until after he shall have attended four courses of graded instruction of not less than six months each in four separate years, subject to the exemptions herein cited. It is the judgment of the Council that the date set for the observance of the four years' requirement in 1899, and subsequent classes, begins Jan. 1, 1899.

The study of anatomy can not be completed in less than two separate annual courses. Final examinations in no part of the curriculum are granted prior to the conclusion of the second annual course.

No reputable college can admit the said Browning, or any other student, upon terms different from those specified in the constitution of the Association of American Medical Colleges as heretofore interpreted by the Judicial Council of the said College Association.

If the Ohio State Board of Examiners establish a standard below the minimum of the Association of American Medical Colleges, the Council can simply deplore the fact, but it can not permit your college, or any other institution holding membership in the Association of American Medical Colleges, to violate the fundamental principles set forth in the time requirements of Article III of the constitution of the Association of American Medical Colleges.

DUDLEY S. REYNOLDS,
STARLING LOVING,
JAS. H. ETHERIDGE,
VICTOR C. VAUGHAN,
ALBERT R. BAKER,
RANDOLPH WINSBOW,
JOHN B. ROBERTS.

On motion of Prof. P. Richard Taylor of Louisville, the secretary was directed to publish this decision and supply a copy to each member of the association.

On Nov. 15, 1897, Prof. Pickney French, secretary of the Barnes Medical College of St. Louis, addressed the following letter to Secretary Holmes:

ST. LOUIS, Nov. 15, 1897.

Dr. Bayard Holmes, Chicago, Ill.

DEAR DOCTOR: I have been instructed by the faculty of Barnes Medical College to make the following inquiries of you:

1. Is a medical college that begins its session on January 1, and terminates the same in the following June, strictly speaking, a summer school of medicine, especially when it issues to students, who leave the institution on May 10, certificates of having attended a full course of lectures?

2. If the Barnes Medical College accepted into its regular session a student from such a college, in what way would it be a violation of the rules of the American Association of Medical Colleges?

3. Is there such a rule in force in the Association of American Medical Colleges that requires a lapse of six months' time between the termination of one session, at which a student attended, and the beginning of another which he desires to attend?

4. Is it not a fact that there is a rule only which requires that no two sessions shall be within the same year?

It was the view of our faculty that a summer school of medicine was one beginning its session in the Spring months and terminating its session in the Fall; that a school that began its session, 60 or 90 days later in the winter and terminated its session only six or eight weeks later in the Spring months, was nothing more than a regular winter session of college work. This being our view with reference to question 1, it naturally follows that we can see no impropriety in accepting a student from such an institution, as having completed a regular course during the year prior to the time which he enters and terminates his session with us; hence this expresses our views with respect to the second question.

The asking of the third question seems to be an absurdity, when we reflect that such a rule would interfere with every college of first-class standing in the United States. For instance, the length of session of all high-graded schools is from six and one-half to nine months. The Barnes Medical College began its present session September 13, and will close the same April 12. Rush Medical College has eight months' session, and the medical departments of our State universities, almost invariably nine months' attendance.

In regard to question 4, we suggest that the rule requiring that no two sessions shall be in one and the same year is not violated by accepting students from a college that graduates its students from the middle to the 25th of June, while other colleges graduate their students between the 2nd week of April, and the middle of May.

Barnes Medical College has always taken pride in enforcing the rules of the American Medical College Association, and it is the purpose of her faculty to abide by the decision of your committees, or the officers of the association—we, therefore, submit this question to you, desiring a speedy reply. If you feel like assuming the responsibility of speaking for the association, we will accept your individual views; otherwise we would be pleased to have you submit this communication to such committee as is empowered to pass upon the subject-matter involved and let us have an answer as quickly as is consistent with proper consideration of the subject.

I am very truly,

PINCKNEY FRENCH, Secretary.

The letter being referred to the chairman of the council, the following answer was returned:

LOUISVILLE, KY., Nov. 20, 1897.

Prof. Pinckney French M.D., Barnes Medical College.

DEAR SIR: For answer to your letter of November 15 addressed to Prof. Bayard Holmes of Chicago, I have to say that a medical college which begins its session on January 1 and terminates in the following June, can not be held to comply with the rules of the Association of American Colleges, if it issues tickets for a full course of lectures, on the 10th of May. The time-requirements have been repeatedly held to be fundamental, and it can not be maintained that a student who begins January 1, can possibly have attended one full course by the following 10th of May.

Second, if the Barnes Medical College accepted into its regular session a student with no other qualifications than those above stated, such student could not be credited with having attended one full course, and would therefore be obliged to enter the same grade over again.

The terms of Sec. 5, Art. III, of the constitution, as it existed prior to June 1, 1897, and of the amended constitution, as it now exists, demand that all candidates for the degree of Doctor of Medicine must have attended three courses of graded instruction of not less than six months each, in three separate years, prior to 1899. After the first of January, 1899, all candidates for the degree of Doctor of Medicine must have attended four courses of graded instruction of at least six months' duration, no two of which shall have been in the same calendar year.

The council has several times heretofore decided that "No student can be admitted to a second course of instruction within less than twelve months from the date of the beginning of the first course," and so on through all the succeeding annual courses required of candidates for the degree.

It has also been held that the Ohio Medical University could not receive a student for the second course of instruction in September, 1895, who had completed a first course of graded instruction beginning Jan. 1, 1895, and ending with the month of June, 1895, notwithstanding the fact that the session of the Ohio Medical University beginning in September, 1895, would not terminate until May, 1896. No member of the Association of American Medical Colleges can be permitted to evade the time-requirements with impunity.

If this letter is not entirely satisfactory, I will cause your letter to be copied and submitted to the entire council; I am sure, however, that the council could not, without stultifying itself by a reversal of former opinions, dissent from the opinions herein expressed.

I am, with great respect, yours truly,

DUDLEY S. REYNOLDS,
Chairman of Judicial Council, A.A.M.C.

Similar communications were received from Prof. Samuel O. L. Potter, Secretary of the College of Physicians and Surgeons, of San Francisco; Prof. W. W. Grubbe of the Toledo, Ohio, Medical College; Prof. Wm. V. Morgan of the Central College of Physicians and Surgeons, of Indianapolis; and many individual correspondents, not connected with colleges, all of whom were answered in similar terms. Accompanying the application of the Milwaukee Medical College, for membership, I have received a certified copy of resolutions adopted by the faculty of the Milwaukee Medical College, Jan. 29, 1898, as follows:

COPY OF RESOLUTIONS ADOPTED BY THE FACULTY OF THE MILWAUKEE MEDICAL COLLEGE AT A REGULAR MEETING HELD JANUARY 29, 1898.

(1) *Resolved*, That beginning with April 5, 1898, the course of study of the Milwaukee Medical College shall consist of four years of six months each.

(2) *Resolved*, That in addition to the winter course, there shall be a spring course of six weeks, said course to be optional.

(3) *Resolved*, That henceforth the Milwaukee Medical College conform to the standard of requirements and rules of the Association of American Medical Colleges and to those of the Illinois Board of Health.

(4) *Resolved*, That the dean of this school be and is hereby instructed to make formal application for admittance to the Association of American Medical Colleges, with the view of having the school admitted at the next meeting of said association.

All the above resolutions were unanimously adopted.

B. A. BROWN, M.D., *Secretary*.

Upon the basis of these resolutions the application for membership is approved.

The application of the Illinois Medical College, made through its president, Prof. Randolph N. Hall of Chicago, is approved, with the understanding that the institution will observe all of the requirements of our association.

On the 15th of April, 1898, Prof. P. S. Conner of Cincinnati charged the St. Louis College of Physicians and Surgeons with violation of Article III, Section 7, of the Constitution, specifying that, in March, 1897, the institution conferred the degree of Doctor of Medicine upon Oscar B. Ormsby of Murphysboro, Ill., and M. A. Finley of Mortimer, Kansas, both of whom it was charged, matriculated as first-course students at the Illinois Medical College of Chicago, for the season beginning March 15, 1895, in support of which the statement of Prof. H. H. Brown, Secretary of the Illinois Medical College, was filed. A correct copy of the charges and specifications, and the evidence supporting them, being furnished the defendant, it was shown that the Finley named in the charges had attended one full course of instruction in the Kansas City Medical College, Kansas City, Mo.; one course at the Illinois Medical College in a separate year, and two terms in two separate years in the St. Louis College of Physicians and Surgeons; and that the Ormsby mentioned in the specifications, being a pharmacist, and having taken a regular collegiate course of instruction, was entitled to one-half term of advancement in his standing. The institution having acted in apparent good faith, and doubts of the sufficiency of the evidence to support the charges in the face of the testimony for the defense, the council decided that the charges should be dismissed, and they are declared, not sustained.

On the 15th day of April, 1898, Prof. P. S. Conner of Cincinnati, preferred charges and specifications against the Hospital College of Medicine of Louisville, and the Kentucky School of Medicine, Louisville, Ky., charging both of these institutions with graduating at the close of their annual sessions, on the 30th of June, and the 1st of July, 1897, respectively, students who had taken the first course of instruction at the Illinois Medical College, Chicago, during the session of 1895, in violation of Article III, Section 7, of the Constitution. To these charges both institutions plead not guilty. To the specifications they plead guilty, and set forth the facts that students attending a full course of instruction in a regular college, in the year 1895, and a second course in the accused institution in the separate year of 1896, and a third course in the separate year of 1897, thus fulfilled all the requirements of Article III, Section 7, of the Constitution, inasmuch as the Illinois College holds its sessions in the spring and summer only, and the two defendants begin their sessions with the month of January and conclude with the month of June, holding no official terms. In view of this testimony, and these facts, the charges are not sustained, and have been dismissed. In the determination of these matters against the Kentucky School of Medicine and the Hospital College of Medicine, the chairman expressed no opinion, and cast no vote.

Before proceeding further with the report, on request of the chairman, that the association should take action upon so much as had already been submitted, it was, on motion, unanimously adopted.

Continuing the report, the chairman stated that the decision declaring the Medical College of Ohio to have forfeited its membership, having been published, and the institution thereby sufficiently punished, the chairman desired to submit the following: "The council now asks permission to declare that the judgment heretofore rendered against the Medical College of Ohio, declaring its membership forfeited, is now vacated and set aside, and the said Medical College of Ohio is invited to renew its membership in the Association of American Medical Colleges. The chairman desires permission to promulgate the decision."

On motion, the consent of the Association was granted unanimously.

On motion, the report of the Judicial Council, as a whole, was unanimously adopted.

By request of the chairman, all applications for membership from colleges not fully complying with the rules and regula-

tions of the Association, may, upon furnishing satisfactory evidence to the council of a determination in future to make full compliance with all the rules and regulations of the Association, be admitted to full membership in the interval between this and our next annual meeting.

On motion, this request was unanimously granted.

Prof. Henry O. Walker of Detroit, presented the following, which was unanimously adopted:

Resolved, That a committee of three be appointed to ascertain the amount of work being done by the several colleges, members of this Association, and offer such amendments to the Constitution as may seem fit to them, for consideration and action at the next annual meeting.

The president appointed the following committee to take charge of the resolution: Prof. Henry O. Walker of Detroit; Prof. John C. Oliver of Cincinnati, and Prof. Thomas H. Hawkins of Denver.

On motion, the secretary was directed to publish the constitution, by-laws, rules of the Judicial Council, transactions of the association, addresses, and papers presented, and all the decisions of the Judicial Council of permanent value, and to furnish six copies to each college holding membership in the association, and one copy to each of the other medical colleges in the United States; homeopathic, eclectic, and to the secretary of each State board of health and to each State board of medical examiners.

The Association then proceeded to the election of officers, with the following result: President, Prof. Henry O. Walker of Detroit; first vice-president, Prof. H. Bert Ellis of Los Angeles; second vice-president, Prof. Samuel C. Woody of Louisville; secretary and treasurer, Prof. Bayard Holmes of Chicago.

The members of the Judicial Council whose terms expire at this meeting are: Prof. Dudley S. Reynolds, Louisville; Prof. Victor C. Vaughan, Ann Arbor, and Prof. John B. Roberts, Philadelphia, each to serve three years from this date.

The president elect requested to be released from the duties of chairman of the committee, created by resolution, which request was granted, and Prof. E. Fletcher Ingalls of Chicago, was appointed instead.

On motion, the Association adjourned to meet on the last day preceding the next assembling of the AMERICAN MEDICAL ASSOCIATION, at the place chosen by that body.

BAYARD HOLMES, Secretary.

The Medical Society of the State of New Jersey.

One Hundred and Thirty-second Anniversary at Asbury Park, June 28, 1898.

(*Continued from page 244.*)

In the evening Dr. J. C. APPLEGATE read an essay on

REGRESSION VS. PROGRESSION, VIEWING THE GENERAL PRACTITIONER FROM A SCIENTIFIC STANDPOINT.

He did not propose to prove regression on the part of the general practitioner as a whole. With few exceptions, their progressive strides have not been in keeping with surgery and other special branches. The world, it is true, has reached a period in the germ theory that our forefathers never dreamed of, yet the germ theory of most infectious fevers remains still a mystery, and will remain till we have learned the cellular life processes and the ability of cells to resist invasion. Many are in the profession who should be at the plow or the anvil, or *vice versa*. It is the noblest profession because the humblest of the profession is the general practitioner. His responsibilities are great. Is it not true that too often our researches decline at the expiration of our demonstrative course of teaching when it ought to be but the beginning. To be successful we must be perpetual students. During the last decade many evils have arisen tending to belittle the profession. These evils have rapid growth. When the student of today enters upon his field he is confronted by many obstacles. Specialists crowd him; some are *bona fide*, others lack the fundamental principles needed. An eminent physician recently said that in the future each patient will be visited by the family physician and the specialist. Who will then bear the responsibility? The splitting up of the profession into specialties has resulted in great danger to the unity of medical science. A man can not be a successful specialist unless first a successful general practitioner, any more than a man can be a successful contractor until he has labored at and mastered the minor details in connection with the art of building.

The general practitioner often encounters patients who have suffered for a period with vertigo, etc., when inquiry of the brain specialist is made, while the cause of the malady exists in some remote part of the system, probably of gastric origin, or neurasthenia when the neurologist is consulted; while the origin is local and ought to be in the hands say of the gynecologist. He quoted a case where a lady, aged 45 years, became the victim of epilepsy. Growing worse, she was referred to the gynecologist. Nothing abnormal was found. The nervous specialist was consulted; no relief. But an humble general practitioner, after a careful study of her case, relieved her entirely by antisyphilitic remedies. He did not condemn specialists, only the excessive and incompetent specialism producing discontent among the laity and producing trouble for the physician. Next, the universal use of proprietary remedies, endorsed by members of the profession, does much to check scientific advancement. Even in this age we find learning and science mingling with ignorance and superstition. In the larger cities the public charity abuse, unless modified, will soon cause the extinction of the aspiring specialist who is not connected with one of these. The motive may be good, but the effect is bad. It encourages the wasting of the wages in debauchery. They claim they are not to work as the good people have provided for them. This evil is unlimited and injurious to the laity as well as the profession. The difficulties to be overcome are many, for it is well known that many are deserving but few in comparison with the host of applicants who are in no wise in need. When the boards succeed in correcting this evil their work will be commendable. The general practitioner is thus deprived of valuable material. The method in vogue at the present time, giving greatest semblance to scientific regression, is the result of the relationship between the physician and the pharmacist. When the two were co-operative, things were better. While the physician is engaged in compounding his own prescriptions, or dealing out fixed formulas, the apothecary is prescribing over the counter and practicing the art of surgery whenever the opportunity affords. If he claims to have been forced into this policy it is in a direction where the counter-pressure is strongest; for the physician has but to look around in almost any home to discover numerous remedies, not proprietary, for various ills, compounded by the authority of one of his own pharmacists. The physician has to become his own clerk, assuming responsibilities which belong to the pharmacist. With the beginning practitioner, no better method could be adopted than to handle his own nostrums, as familiarity tends to better his knowledge. The established physician can better afford to leave this work to the pharmacist, utilizing his time in seeking for more accurate knowledge of disease and its remedy. Can we afford to fill our cases with combinations of tablet triturates, etc., furnished by dealers, with foot-notes telling us in which diseases, etc., we shall use them? One of the greatest evils is the indiscriminate use of fixed formulæ. He who would be a progressive scientific practitioner must discard such and decide as to what to give his patient after a careful study of the history, etc., of his patient. The science of medicine is a living, not a dead, science. With the suppression of these evils, why should we not note a period in our profession paramount with the historical eighteenth century? He who tells us he has something good to reduce temperature without weakening the heart, and can not name the ingredients, had better remain on the farm. In the golden age of medicine, the eighteenth century, the profession was not overcrowded and there was much less of that one-sided narrow education that obtains today. What shall be the future? Will we continue to approve the use of proprietary nostrums? Or shall we take a bold stand in favor of scientific advancement, making the first decade of the twentieth century an epoch in the history of progressive medicine hitherto unsurpassed? In this the general practitioner should play a most active part. He comes in contact with a disease which claims the lives of thousands annually, one-eighth of the whole human family, regardless of science, more destructive than Vesuvius and more deadly than war. Were he to devote his life to this and establish treatment to successfully combat it, it would be well spent. We can not all be Grosses, Agnews or DaCostas, but he who first is successful in isolating the tubercle bacillus and points out the antidote to effectually neutralize it in the system, will go down in history beside Jenner and his name will be emblazoned on the tablet of fame.

Dr. P. A. HARRIS read an essay on

THE DANGERS OF CERTAIN FAULTY IMPRESSIONS REGARDING THE MENOPAUSE.

This usually occurs between the ages of 40 and 50 years. It is not attained by all in the same manner. Two-thirds skip one, two or three periods for a longer or shorter time prior to cessation. The rest stop suddenly. The average time for this large class to menstruate irregularly is two and a half years. To aid in judging as to what is physiologic and what patho-

logic we must learn the previous habits of the patient. When we find the lengthened period and flow markedly out of proportion to her habit, we will be warranted in assuming that a pathologic condition is present. Endometritis, small myomata, the forthcoming cancer, were doubtless the pathologic causes of the floodings observed. The profession and the laity still have incorrect impressions as to the menopause. Even Tilt regarded as connected with the change many things observable constantly under other circumstances. These are merely coincidents. I believe insanity and melancholia may be a result. Leucorrhea and painful menstruation should not be credited to it. These disturbances may often be readily relieved. The uterus is a pocket, its cervix a sinus, and when once well inoculated with pyogenic tubercle, etc., it is common for the disease to extend to the fallopian tubes, producing pelvic pain, backache, fever, headache, yet neither of these may be sufficient to cause all so affected to apply for relief, If a patient is nearing the age when the menopause is expected, if she skips a period, has a leucorrhea, etc., she is apt to regard it as the change. Usually her physician agrees with her, orders some slight treatment, and she returns later with an increase of the symptoms. He then makes a physical examination and may at once discover an unmistakable carcinoma. The question of operation occurs, but the case has been made worse by the delay or neglect; thus, constantly, carelessness causes injury and perhaps loss to the physician. Often, on the other hand, the woman is led astray by her friends, who view all such matters in the light of the change and believe that all will soon come right. Here the delay is the result of the common belief that so many things are due to the change. After carcinoma, the most common trouble is the development of uterine fibroid or myomata. Even small fibroids are often dangerous to neglect, producing emaciation and an appearance as of carcinoma. The expectant treatment must here be abandoned as a cure is almost sure to follow the proper treatment. There is little in the change of life to affect the woman so as to produce serious pathologic conditions. Such may coexist, but are not in relation as cause and effect. In all cases we must make particular inquiry and physical examination; never let the nearness of the menopause influence the opinion to the neglect of every precaution. It is important to detect cancer early. Remove such and the mortality will be largely reduced. While late operation often results in good, yet we have no right to expect it. We should not depend solely upon the fingers, eyes, etc., but use the microscope. Let us then remember that the menopause of itself has little if any effect in either precipitating or arresting the more serious diseases of the pelvic organs; that many of the pathologic conditions are inaugurated and maintained with little regard to that special period in the life of females when the phenomena of ovulation and menstruation are preparing for their final adieu.

Dr. S. A. TWINCH read a paper on

THE EARLY DIAGNOSIS AND TREATMENT OF POTT'S DISEASE.

This paper was well illustrated by pictures on the screen and gave much satisfaction to the society. Spondilitis is a chronic tubercular osteitis which may begin in any part of the spinal column. The symptoms which aid in the diagnosis during the period before deformity appears, he mentioned, as it is then arrest of the trouble may be hoped for. There is a lowering of the vital functions as a premonitory stage. The cervical form shows a rigidity of the muscles around the neck, with difficulty of breathing and occipital neuralgia.

The head is in various positions, generally to one side, the face looking down. The positions assumed are maintained by the rigid cervical muscles. The body turns with the head. Dysphagia is present, caused perhaps by abscess of the vertebra. Such cases are more comfortable when standing or sitting than lying down. Cervical caries is often confounded with torticollis. In caries there is often spasmodic contraction while in torticollis only the one muscle is affected. In dorsal caries an early symptom is rigid back muscles and a prominence of the abdomen. This is nature's method of splinting the spine. The natural flexibility of the healthy spine and the reverse of the diseases is significant. Stooping shows this peculiar gait is an early symptom; he walks with care. Lateral deviation is also a well-known symptom on which great reliance can be placed. This may be slight and easily overlooked. Elevated temperature is constant. The afternoon rise is from 1 to 4 degrees. Paroxysmal pain is frequent at the seat of the disease or in the chest or abdomen aggravated by jar, etc. At night this simulates his disease, by the night cries, or it may be mistaken for stomach-ache. Persistent abdominal pain ought to receive attention although it is not diagnostic of Pott's disease. Absence of pain can not be assumed as absence of Pott's disease. Tiring easily, leaning on chairs or tables means danger ahead. Dorsal must be differentiated from rachitic and rotary lateral curvature of the spine. Here we have rachitic symptoms, enlarged epiphyses, open fontanels, decayed teeth, etc. Again there is no spasm of the muscles, little or no pain and no elevation of temperature. Lumbar Pott's disease is more difficult to detect early. The occurrence of deformity may be preceded by flattening of the lumbar curve. The attitude is that of lordosis, the gait military and careful. Here curvature is most marked. We may be deceived by the ease with which the child bends the spine to stoop. In Pott's disease the irritation of the lumbar nerves causes psoas contraction, drawing up the thigh. Early, it is difficult to differentiate the two troubles; generally, when the hip symptoms are due to Pott's and the joint symptoms are caused by psoas irritability, the motion in the hip is the loss of extension while abduction and internal rotation are free and not affected. The limitation of motion in one direction is usually sufficient to establish the presence of Pott's disease. Complications are abscesses, the location varying. In cervical it usually opens into the mouth or neck: in dorsal or lumbar in the back or may burrow to open below Poupart's ligament, etc. Watch carefully that the spine is properly supported, remove all weight from the vertebræ. In treatment we must not forget it is tubercular and calls for constitutional treatment. The local affection must be treated by rest; prevent friction, relieve superincumbent weight. We have the plaster jacket and the spinal steel brace. Both have their uses. The first has the advantage of cheapness and can be moulded to fit the body. It is also porous and should be renewed every three months. The jacket is especially suitable for mid dorsal lower dorsal and lumbar Pott's disease. When above the lower dorsal region a jury mast should be used to support the head and shoulders. Accurate adjustment is needed. It must not have any buckles and straps at the will of the patient. If there is to be any fastening, let it be a single row of hooks as on a laced shoe, and care must be taken to bring the edges together. The advantage of the plaster jacket is, once applied it can not be tampered with. We usually keep a child in a closed jacket for three years, then a lace or open jacket another year, taking it off at nights the last six months. For upper dorsal and cervical the jacket is not suitable, not supporting the parts above the disease. It can here only serve as a support for the jury mast. A good apparatus here is Sayer's body brace combined with Schaffer's head-piece. It immobilizes the weight and supports it, thus being superior to a jury mast. The foundation of all jackets is the hip bones, hence it is useless to apply anything till this part of the anatomy is developed to give the support. This is usually by the age of three years. The only satisfactory way of treating very young children is by recumbency and the wire cuirass. A board can be cut to the shape of the child, well padded to be comfortable to lie on. If traction is required a mast can be applied to the upper end. The child is then bandaged to the board, being partially removed morning and evening so that the back may be rubbed with alcohol and treated with powder to prevent irritation. A proper and concise record should be kept to see that the deformity does not increase. The little knuckle at the back may increase so slowly that it is not noticed. A photograph is useful here, or better a tracing with a flexible piece of zinc. If we find increase, no matter how slight, look for the cause. There may be fault in the apparatus, not giving sufficient support to the spine, or the child may be doing too much running around; here recumbency is indicated for a few weeks. For bed patients it is advisable to use apparatus to ensure the child being kept in a recumbent posture. The Bradford frame is extremely simple. It is made of four pieces of gas-pipe put together with elbows. Across the frame are stretched two pieces of canvas between which a space is left opposite the buttock. This frame can be laid on the bed and the child strapped to it. It can be carried all over the house. Abscess depends on location. Post-pharyngeal must be opened as soon as possible because of the tendency to embarass respiration; elsewhere, better let it alone unless there is a great deal of systemic disturbance or when increasing rapidly. If opening is imperative, after this dress antiseptically and keep clean. Iodoform and glycerin injection are of no use as not reaching the seat of the disease. The formation of an abscess, however, in a case which has been under treatment for some time, suggests that the spine is not being fully and properly supported. The case may need a jury mast, or possibly ambulary treatment for a time is contra-indicated. Here keeping in bed, wearing the apparatus, will be of inestimable service.

After some routine business the officers for the ensuing year were elected: President, C. R. P. Fisher, Bound Brook; first vice-president, Luther M. Halsey, Williamstown; second vice-president, Wm. Pierson, Orange; treasurer, A. Mercer, New-

ark; secretary, W. J. Chandler, South Orange; corresponding secretary, E. L. B. Godfrey, Camden. Next place of meeting Deal Beach, last of June, 1899.

PRACTICAL NOTES.

Abdominal Massage is being highly recommended for its diuretic effect in heart disease.—*Bull. de l' Acad. de Méd.*, May 10.

Urethran and Quinin hydrochlorate in the proportion of 1 to 2, form an effective combination for intravenous and subcutaneous injection. *Gaz. degli Osp. e delle Clin.*

The Almost Invisible Cultures of the Influenza Bacillus become large and prominent if inoculated with the staphylococcus aureus. This fact, recently announced by Meunier, may prove important in the study of micro-organisms.—*Progrès Méd.*, June 18.

Tachycardia in Pulmonary Tuberculosis is always an indication of a rapid course and fatal termination of the disease, according to Sirot. It is symptomatic of an endocarditis from specially virulent bacilli or of a myocarditis from miliary tuberculization.—*Semaine Méd.*, June 8.

Dry Suture of Intra-abdominal Hydatic Cysts.—The cyst is evacuated and wiped dry with sterilized tarlatan, then sutured with a continuous suture, followed by the suture of the abdominal wound. The cyst does not fill again, and obliteration is much more rapid and complete than by the usual methods. —Bobrov of Moscow: *Semaine Méd.*, June 7.

Intranasal Synechia is very apt to follow galvanocauterization, but it can be entirely prevented by cauterizing with a few crystals of chromic acid melted on the tip of the probe. The scars thus produced act as insulators, and the process is but slightly painful, much to be preferred to the metal plate and celluloid plates recommended for the purpose.—*Jour. des Soc. Med. de Lille*, June 18.

Combined Electric Treatment of Sciatica.—Renault has cured 80 per cent. of all his cases by combining the electric bath from a static machine with sparks induced along the spine and course of the sciatic, and faradization of the atrophied muscles in turn until ten to twelve contractions have been produced. The seances are repeated every day or alternate days. Some are cured in one to five; others require twenty to thirty. —*Semaine Méd.*, June 1.

Cimicifuga Racemosa for Buzzing in the Ear.—Robin and Mendel have found thirty drops a day of the extract of cimifuga racemosa extremely effective in arresting the noises in the ears caused by direct or reflex stimulation of the auditory nerve, with or without accompanying lesions, ear-plugs, etc. This drug has already proved a good antispasmodic for parturient cases, with marked diaphoretic, narcotic and antipuritus properties.—*Munich Med. Woch.*, May 31.

Inflammatory Processes in Meckel's Diverticulum produced symptoms resembling appendicitis in two cases recently observed by W. Kramer. In one case the trouble was not located until a second operation, when the diverticulum was found occluded by a fruit seed. In the other it had encircled and crooked a loop of the intestines, causing symptoms of ileus. Both were resected after double ligature. One other similar case has been reported by Picqué.—*Munich Med. Woch.*, May 31.

Methylene Blue in Migraine and Nervous Headache has been found very effective in several cases, including himself, by E. Thomson of Dorpat. It prevented the appearance of the severe headache that had previously always accompanied the arrival of the menses in some of the patients. He noticed the increased desire to urinate, and the green tinge of the urine that accompanies its use. It is given with nutmeg aa. 0.1, in a gelatin capsule. One dose may prove sufficient.—*St. Petersburg. Med. Woch.*, June 11. Migrol, a combination of equal parts brenzcatachuin-monoacetic acid, caffein and guaicatin, has also been found very effectual in migraine. Dose 0.5, one to three times a day.

Acute Phosphorus and Morphin Poisoning.—Potassium permanganate has been found effective in neutralizing these intoxications, as it transforms the phosphorus and morphin into harmless oxidated combinations, but, as the potassium itself is poisonous to a certain extent, Schreiber has been testing sodium permaganate, which he finds equally effective and non-irritating. He advises a 0.2 per cent. solution to rinse out the stomach, afterward introducing half a liter and leaving it.—*Cbl. f. Inn. Med.*, No. 23.

Movement Test for Lumbago and Ischias.—L. Minor calls attention in the *Deutsche Med. Woch.*, Nos. 23 24, eleven cuts, to the characteristic manner in which patients raise themselves from a seated position on the ground. With lumbago the motions are the same as in pseudo-hypertrophy of the muscles; the patient bends forward and raises himself by pressing down on his legs, thus climbing to an erect position. In ischias the center of gravity is thrown backward, and the patient supports and raises himself on one hand placed behind him, balancing the other in the air.

Iodin for Infective Gastro-enteritis.—Grosh administers a teaspoon of the following every one or two hours: Tinct. iodin, 15 to 18 drops; aq. dest., 150 grams; simple syrup, 20 grams. The vomiting, pain, diarrhea and fetid odor of the stools disappear with this treatment, which is also effective in icterus, gastric grippe and incipient appendicitis. He has also found iodin an effective disinfectant in typhoid fever, giving six drops tincture in a little sweetened water three or four times a day. —*Semaine Méd.*, June 22.

Milk for Nutritive Enemas.—Some recent tests at v. Leube's clinic show that milk is the best substance for this purpose, as a liter introduced into the colon is readily absorbed without any irritation or pain, or the appearance of albumin or sugar in the urine. No digestion occurs in the colon. The carbohydrates are absorbed best, the albuminoids next and the fats least. The coagulation produced by the bacillus coli interferes with the absorption. This is avoided by thoroughly rinsing out the bowels before administering the milk and by the addition of 1 to 1.5 grams natrium carb. to the liter.—*N. Y. Med. Monatsschrift*, June.

Incompatibilities of Antipyrin.—Tannin precipitates antipyrin in the form of a tannate. Calomel combines with antipyrin to form a very poisonous organic mercurial combination. Antipyrin and carbolic acid also form a combination which forbids their being prescribed together, as is also the case with antipyrin and substances which contain nitric acid, such as amyl or ethyl nitrite. If antipyrin and sodium salicylate are mixed in a powdered form they combine into a gelatinous mass, but they do not affect each other in solutions.—*Vienna Klin. Rundschau*, May 29.

Electric Treatment of Psychoses proceeding from parasthesia of the dura mater, has been found effectual in four cases, by C. Mondino of Palermo. These psychoses commence with tingling, sense of pressure and burning in the cranial vault, followed sooner or later with impairment of the mental faculties, pronounced hypochondria, and various fixed ideas: persecution, an insect crawling under the skin, etc. All these symptoms are connected with the paresthesia of the dura mater, which can be cured with galvanization, when they at once cease. A large electrode is applied over the affected region on the skull, connected with the positive pole with a current of 10 to 15 milliampères. Six to fifteen seances accomplished the cure.—*Semaine Méd.*, June 1.

Excision of the Fibula for Sarcoma.—Lloyd, in *Annals of Surgery* for June, reports a case which he believes to be the first example of excision of the fibula for malignant disease, as in malignancy amputation is usually resorted to. In this case there has been no sign of recurrence, and while there is considerable ankylosis at the ankle-joint, the patient walks with very little limp and claims to be perfectly comfortable.

Treatment of Paralysis Agitans, based on the observation that the rigidity and trembling affect the flexors only, while the extensors strive to correct this tendency, has resulted most successfully in the experience of R. Veerhogen (*Jour. Med. de Bruxelles*, 1897, No. 38). He aims to strengthen the extensors and tranquillize the flexors; the former by faradization as powerful as the patient can bear, followed by light massage; the latter by administering atropinum sulfuricum, 0.25 mg., combined with 0.2 gram secale cornutum, and connecting the positive pole of a galvanic current. His patients have resumed their occupations and consider themselves cured.—*Deutsche Med. Woch.*, June 16.

The Deodorizing Properties of Formalin have not been emphasized to the extent they deserve. A tablespoon of formalin in a liter of water will be found the most efficient of all deodorants, non-toxic and absolutely non-irritant. It is especially recommended for offensive discharges, for the anal and genital region, for excessive perspiration of the feet and armholes, to use after dissections, to wash off furniture, commodes, lower part of walls, vessels, etc. The upper part of the walls may be deodorized by evaporating the "formalin water" in a pan over a lamp. The vapors do not affect the inmates of the room.—*Munich Med. Woch.*, May 31.

Value of the Salts of Ammonium.—F. Mohrhoff announces that these salts, and especially the ammonium-silicon fluorid, have a most powerful antiseptic and tonic effect when inhaled; "an ideal medium for the treatment of all diseases caused by abnormal metabolism, as diabetes, etc., as well as affections of the air-passages." As a tonic the effect is more direct and immediate than that of iron. He has invented an improved inhaler which renders its application more convenient, but does not describe its features in his communication to the *Deutsche Med. Woch.* of June 9, merely mentioning the maker.

Cocain Intoxication.—Weigand has collected 250 cases of acute cocain intoxication, twenty-one fatal. It is impossible to establish a maximum fatal dose for man, as the tolerance varies widely. The most dangerous application seems to be large amounts applied to the mucous membrane. Seven deaths followed its use internally, two in the rectum (*Cbl. f. Chir.*, May 28). Bozza reports, in an Italian journal, that the hypodermic injection of physiologic salt solution immediately after the ingestion of nearly twice the fatal dose of cocain will preserve dogs from intoxication. He therefore recommends hypodermoclysis for cocain intoxication.

Urethral Pencils must be made of a substance that will not melt and run out. A combination of two parts cocoa butter, one part lanolin is recommended in the *Bulletin of the Bordeaux Soc. de Pharmacie* for May. This is melted and set aside until needed, when it is remelted and the medicament blended with it. A glass tube is then inserted in the fluid mass and it is drawn up into the tube by suction with the mouth. The other tubes are filled in the same way, and when the fluid is hardened, but not really cold, the contents of the tube are pushed out with an iron rod, 3 mm. in diameter, which fits smoothly inside the tube. The pencil is received on a marble or glass slab. They can be delivered at once, but are not perfectly solid until the next day.

The Success of Salophen in Curing Pruritis is proclaimed by several writers in the *Dermet. Ztschft.* for May. Salophen is a combination of salicylic acid with acetylparamido-phenol, and passes through the stomach unchanged, to be slowly split up by the alkaline secretions of the intestines. It cured a number of chronic rebellious cases accompanying moist eczema, diabetes, urticaria and psoriasis, and checked any recurrence of the pruritus. The dose is 3 to 6 grams a day. Drews ascribes the cure to it in a couple of cases of gonorrheal rheumatism out of five treated. According to Drasche, it produces copious perspiration and the skin is found scattered with minute crystals of the same form as salophen crystals. All state that it does not disturb the digestion.

Cheese in Nervous Dyspepsia.—The dyspepsia accompanying herpetism or neuro-arthritism is very deceptive in its manifestations; patients complain of heart, lungs, brain affections, vertigo, paralysis, but the true trouble is indicated by the triad; cold extremities, insomnia during the middle of the night and fatigue on waking in the morning, with, occasionally, pain in the sternal or intercostal regions, palpitations, drowsiness in the evening, etc. Lancereaux forbids to such patients everything fried, acid or uncooked, wine, chocolate, colored sauces, fruit and bread, except the crust or toast. But he recommends the cheese of the Brie, Camembert and Roquefort varieties, a little very fresh butter, eggs, broiled or roast meats, etc.; for breakfast a crust of bread, soft egg and Brie cheese. Water is the principal beverage, with a little tea, coffee or mild beer, or ordinary beer diluted with Vals water or very weak brandy water.—*Union Médicale*, May.

Treatment of Prostatic Retention.—Rochet bases his treatment on repeated catheterization, provided it can be done with ease and is not required too frequently, in which case a permanent catheter should be inserted. If catheterization is too difficult and urine is retained, with fever, pain, hemorrhage, etc., the bladder should be punctured again and again, or temporary drainage of the bladder arranged, after which the congested condition may pass away and the normal flow of the urine be restored or catheterization become easy again. Chronic cases may require perineal drainage, dilatation and perineal prostatectomy. For extreme cases with infective suppurating cystitis, suprapubic cystostomy is the only means of relief. The importance of immediate investigation by both abdomen and rectum in case of any disturbance in the functions of the bladder in elderly men has recently been emphasized by Englisch, who adds in regard to catheterization that the "longer the retention has lasted, the more slowly should the bladder be emptied."—*Cbl. f. Chir.*, June 11.

Treatment of Lupus with the Roentgen Ray and Concentrated Sunlight has passed beyond the experimental stage. H. Kümmel of Hamburg, announced at the German Congress of Surgery that he had positively cured sixteen patients to date with exposure to the Roentgen ray for fifteen to twenty minutes, twice a day for a period of four weeks to several months. The sound skin is protected by a light sheet of lead or stanniol, cut to expose only the lupus patch, with the tube from 20 to 40 cm. distant. All irritation of the skin is most carefully avoided, and exposure individualized to prevent the slightest dermatitis. The lupus patches heal over with a smooth surface scarcely to be distinguished from normal skin. Similarly favorable results have been secured by Finsen of Copenhagen, with contracted sunlight or electric light, excluding the heat rays. As blood prevents the passage of the rays he expels it from the point to be treated by a convex, transparent glass saucer, strapped on tightly. He reports a large number cured from one to two years, but his process requires months of treatment, as only a small point can be treated at a time. The combination of this method with the Roentgen ray treatment promises remarkable results. The latest tests fail to confirm the bactericidal action of the Roentgen ray. Its effect on lupus is evidently due to some still undetermined influence on the lupus tissue, possibly electro-chemic or trophoneurotic.—*Cbl. f. Chir.*, July 2.

SELECTIONS.

Medical Education in Mexico.—In 1578, a chair of medicine was initiated in the University of Mexico—that institution being then twenty-five years old—and was the first of the kind to be established in the New World. It was called the *prima* or morning class, and the professor was expected to cover the whole field of the science, as it then was taught; and it was said that he managed to do so in the course of four years. The student, as the custom then was, was required to serve a pupilage under some practitioner for a longer or shorter period. Candidates had previously to study Latin and to go through the course of arts, and astrology or mathematics, and to obtain the degree of Bachelor of Arts. In 1599 a second chair of medicine was founded, which was called *vesperas*, or evening class. In 1661 chairs of methodus medendi and of anatomy and surgery were established; and later a class of dissection and operative surgery was added. At the end of the curriculum the student obtained the degree of Bachelor of Medicine; subsequently, after a fresh examination, that of licentiate; and finally, after an interval, that of doctor. In 1768 a Royal College of Surgeons was established on the model of similar colleges then existing in Cadiz and Barcelona. In this college practitioners of a lower grade were trained; they were called "Romancist surgeons," to distinguish them from the "Latin surgeons" who studied in the University. At this College, also, phlebotomists, dentists, bone-setters, midwives, etc., picked up such scraps of knowledge as were required for the exercise of their several functions. After a time an ordinance was made that no one should be allowed to matriculate in this school who did not know Latin. In 1830 a further step was taken for the improvement of the professional education of the surgeons in the shape of an enactment that no one should be admitted to the school of surgery who had not previously obtained the degree of Bachelor of Philosophy. In 1831 the two branches of the profession were finally amalgamated; all candidates were required to submit to examination in medicine and surgery, and the faculty conferred a diploma in both, instead of the various diplomas of physician, "Latin surgeon," and "Romancist surgeon," which had previously been given. The numerous political changes which swept over Mexico in the years following 1833 affected the medical school, which was several times closed, and more than once in danger of destruction. Largely owing to the public spirit of its professors, however, it managed to survive, and under the enlightened administration of General Diaz, it has now developed into a highly efficient teaching institution. Before 1833 it had 11 professorships; from that date to 1877 only 5 were added. From 1877 to the present date 10 new chairs have been established, without counting a large class of clinical teachers, assistants and prosectors.

Cesarean Section.—Reynolds (*Am. Jour. of Obstet.*, June) considers Cesarean section justified in all cases where a mechanical obstacle renders delivery, in an otherwise healthy woman, more than ordinarily difficult and dangerous. His experience covers twelve years' service in a clinic which delivers 2500 women every year. He believes that symphyseotomy should be restricted to the class of cases from which he would exclude performance of Cesarean section, *i. e.*, cases of moderately contracted pelves in women not previously healthy, or in women exhausted by long labor. His conclusions are: 1. That in women who are the subjects of visceral disease or other previous ill health, and in women who are exhausted by long labor, the maternal mortality of the Cesarean section is too great to allow of its performance in the interest of the child alone. 2. That in primiparæ with moderate contraction the decision whether or not the Cesarean section should be performed as an alternative operation at the beginning of labor in preference to an attempt at an intrapelvic delivery, is a decision which is intrinsically so difficult that it should be attempted by none but the most experienced obstetricians. 3. That in most cases of moderate contraction in primiparæ it is best to wait until the progress of labor teaches us which is to be the safer operation in the given case. 4. That when any healthy woman has lost one child by a difficult operative labor in the hands of an expert she should in the next labor be prepared for Cesarean section and delivered by it, unless the course of labor shows that from some changed condition, e. g., a small child or a more favorable position, a forceps delivery is likely to be easy. 5. That when any case occurs in the practice of the comparatively few men who are really experienced in both obstetric and abdominal surgery, in which an attempted forceps operation proves to be exceptionally difficult and version promises no better results, the forceps operation should be suspended, and if the fetal heart is undisturbed, should be abandoned in favor of the Cesarean delivery. 6. That in very small pelves, e. g., those under three and one-fourth inches in the conjugate, the Cesarean section in favorable circumstances is the operation of preference.

The Treatment of Carbolic Acid Poisoning with Vinegar.—The following case is related by Dr. Steavenson in the *Indian Medical Record:* The patient was a girl 18 years old, who said she was subject to "fits." On Aug. 3, 1896, she was taken with one, and when the physician saw her she was in a semi-conscious condition and frothing at the mouth. She had vomited slightly, and the vomited matter had a sour smell, but no carbolic acid odor was observed. She regained consciousness, and a bromid draught was administered. She gradually became worse and another physician was called to see her. He diagnosticated the case as one of carbolic acid poisoning and as he could not rouse the patient nor get her to swallow anything he ordered her to be removed to the hospital. On admission she was still wholly unconscious, cyanosed and nearly pulseless. The lips and tongue were discolored and the breath had the odor of carbolic acid. The physician gave her a hypodermic injection of strychnin (one-eightieth of a grain). He then passed a soft stomach tube, washed the stomach out with equal parts of vinegar and water, and followed this with about six pints of warm water. He then gave her five ounces of milk and an ounce of brandy. She was then put into bed and kept warm. She gradually regained consciousness, and a few hours afterwards was able to speak. She was fed on Benger's food, milk and soda-water for the next three days. She did not vomit or complain of any pain. Carboluria was present for two days. The author states that he was led to use vinegar in this case by Professor Carleton's suggestion in the *Practitioner* of August, 1896. He can not state definitely how much carbolic acid was taken. The long period of unconsciousness, the rapid recovery, and the absence of discomforting after-effects speak well, he thinks, for the vinegar, and he is of the opinion that it should be given a fair trial, especially as it is a remedy easily obtained.

Primary Tuberculosis of the Spleen.—Quenu laparotomized a woman of 21 years, in April, 1897, for a painful tumor of the spleen. She had previously been affected with cervical adenopathy. The lower portion of the organ was found grayish-white and fluctuating, the seat of a tumor the size of a man's head, but adherences rendered extirpation impossible, although he was able to bring it into the abdominal wound and suture it to the parietal peritoneum. An incision only brought a few drops of fluid. A couple of pockets were excavated with the fingers, removing a fibrinous substance, and drains inserted. A fetid fluid was discharged through them and, in a few days, the wound filled up with a greenish, granulating mass, which was removed every day with the scissors or thermocautery, in fragments. This elimination of the mortified substance continued into August, but the wound definitely healed over by September. The Koch bacillus was noted in the tissues removed. In May a tumor of tuberculous origin also appeared in the supraclavicular region, which was promptly extirpated. —*Rev. de Gyn. et de Chir. Abd.*, March and April, 1898.

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SATURDAY, AUGUST 6, 1898.

UPON THE EXISTENCE OF A MINUTE MICRO-ORGANISM IN CASES OF CIRRHOSIS OF THE LIVER.

While working with the so-called Pictou Cattle Disease, in 1894-5, Professor ADAMI of Montreal, obtained from the livers and abdominal lymph glands a characteristic micro-organism. The striking feature of this disease is an extensive cirrhosis of the liver, accompanied by swelling of the periportal and retro-peritoneal lymph glands, with some ascites, and with follicular ulceration of the fourth stomach. The recognizable symptoms, the most marked of which is falling off of the milk, which becomes bitter when heated, occur shortly before death. Hence the cirrhosis must have been advancing for some time without producing any symptoms.

The microbes referred to are very difficult to stain, that is to say, they stain easily but lose their stain with extreme facility. They are also extremely minute, being barely recognizable with a fifteenth immersion lens.

The presence of these micro-organisms in the cirrhosis of the liver of Pictou Cattle Disease led ADAMI[1] to examine cirrhotic human livers for the purpose of observing whether or not the same or similar micro-organisms occur there. It will be recalled that HANOT and French pathologists in general have for some time held that the large, smooth cirrhotic liver with jaundice (hypertrophic cirrhosis) is of infectious origin. No one, however, has ventured to state that the more common, so-called atrophic cirrhosis, is due to microbes, the general opinion being that alcohol and other irritants, by causing a chronic gastro-enteritis, lead to the absorption of toxic bodies from the food, which toxic substances induce, as they are taken up by the portal blood, a proliferation of the portal connective tissue.

Professor ADAMI'S study of human atrophic cirrhosis was met by many difficulties, the chief one being the difficulty of securing a satisfactory and positive stain. In favorable instances, however, he was able to make out that certain fine granules in the liver sections resolved themselves into large numbers of minute micro-organisms of the character observed in Pictou Cattle Disease, but smaller. In the main they were present as diplococci, with slight halos around them. Many of the forms resembled small gonococci, but variations in size of the micro-organism occurred. Some of them resembled short bacilli.

ADAMI has not yet been able to elaborate a perfect stain. The most satisfactory procedure so far consists in placing the sections for a minute or two in a weak solution of acetic acid, then to wash out the acid, and after passing the sections through absolute alcohol, to place them in a solution of methylene-blue and anti-lin oil. Here they are left for half an hour. They are then transferred for fifteen seconds into a mixture of two parts anilin oil and two parts xylol, and then into xylol. This method gives fair results for immediate study but does not yield permanent specimens. By this method the bacteria are seen plainly in the newly-formed connective tissue, and also, without doubt, in the liver cells. Some of them do not stain perfectly, remaining brownish, and these are probably dead.

At the time of making this report ADAMI had come across this micro-organism in every case of advanced hob-nailed liver examined (five cases) and he would go so far as to state, that in a number of cases, at least, of atrophic cirrhosis, there is present a minute micro-organism resembling closely the one in the infective cirrhosis of cattle.

Since making his first report ADAMI has had occasion to study material from Rush Medical College, Chicago, and the Johns Hopkins Hospital of Baltimore, and in all of the Chicago cases, as well as in ten well-marked examples from Baltimore, he was able to recognize the appearances above described.

A fuller description of these most interesting observations will be presented at the meeting of the British Medical Association at Edinburgh, by Dr. Osler.

[1] Montreal Medical Journal, July, 1898.

CONCERNING THE SO-CALLED APOPLEXY OF THE UTERUS.

The condition described by CRUVEILHIER, and later by ROKITANSKY, KLOB and DITTRICH, under the term of apoplexy of the uterus, has not been given any consideration in the ordinary gynecologic text-books.

C. VON KAHLDEN,[1] of Freiburg, has recently described several cases which he has observed anatomically and subjected to a thorough examination.

The anatomic condition is, in its principal features, the same in all cases. While the size of the organ may vary, as well as the size of its cavities, there is found everywhere, in the mucous membrane of the uterus, more or less pronounced hemorrhagic infiltration, which in the least marked instances remains limited to the mucous membrane, while in the more advanced cases it extends deeply into the muscular coat. The cervical mucous membrane is always free from extravasations.

The most striking as well as most characteristic features in these cases are the changes in the vessels in the outer half of the wall of the uterus. These changes are regarded by VON KAHLDEN as arterio-sclerotic in nature. The arteries present segmentary semilunar, and even annular, calcification of the media, with advanced narrowing of the lumen, the intima being sometimes ten times as thick as normal, the muscle granular, more rarely the seat of a hyaline degeneration. This thickening in the intima very often reminds one of the endarteritis of syphilis. In advanced cases the calcification may have involved the intima. The veins in the vicinity of the diseased arteries are greatly dilated and filled with blood: the muscle of the uterus being sometimes necrotic and sometimes the seat of atrophy and connective tissue substitution. These various changes are finely illustrated by means of lithographs of colored drawings. VON KAHLDEN does not regard the hemorrhages into the mucous membrane as due to rupture pure and simple, because the diseased vessels are so far away from the inner lining. He is inclined to the opinion that the hemorrhage results from retrograde changes in the blood, which view, although it seems rather unreasonable on account of the numerous anastomoses of the uterine arteries, yet appears to be well substantiated by the considerations presented in the article.

The etiology is entirely obscure. Among the conditions that might be brought into question, although any direct connection with any one of them has not yet been established, may be mentioned pregnancy, involution, inflammatory puerperal processes, menstrual congestions, and old inflammations. Under all conditions the cause has to be sought in local changes, because the arterio-sclerotic process described runs its course independent of arterio-sclerosis elsewhere in the body.

The diagnosis is not easy. The hemorrhages constitute a prominent feature. With a curette it would often be impossible to bring away any of the typically diseased vessels, and even should this be the case the condition may be readily confounded with carcinoma and inflammatory processes. The hemorrhages and the old age of the patient are facts that at once prepossess the physician in favor of a carcinomatous process, and the extravasated masses of blood very often press together the glandular tubules in such a way that they resemble not a little the glandular masses of carcinoma. It is the fact that this process may be confounded with carcinoma that has led us to call attention to it.

[1] Ueber die Sogenannte Apoplexia uteri, Zeigler's Beiträge, xxiii, 1, 1898.

SALINE INFUSIONS.

It is surprising that the use of saline infusion, a method so incomparably superior to all others in the treatment of hemorrhage and shock, should meet with such restricted use among the general practicing physicians. There are perhaps few hospitals that are not provided with the apparatus and the sterile salt solution necessary for infusion at ten minutes' notice, yet the general practitioner seems almost never to class it among his methods of combating hemorrhage, shock and septicemia. He feels his duty done when he has filled the patient with strychnin, whiskey, digitalis, nitroglycerin or coffee. The effects of intravenous and hypodermic infusions are so immediate and so absolutely life-saving in many instances that nobody who has ever seen its use can doubt for a moment its superiority as a surgical method. The greater the pity, then, that the general practitioner of the country and city districts, nay many a surgeon in hospital practice, should fail to place this among his everyday practices in the treatment of his cases. It is needless for the country practitioner to say that he rarely has the opportunity for its use, because he certainly has cases of typhoid with hemorrhage, post-partum hemorrhage, septic cases, and many cases of severe injury to treat in the course of a twelve-months. He need not cast aside the hypodermic syringe, the stimulants and all other means of combating shock, but in omitting the use of the infusion of salt solution he is omitting the most nearly life-saving agent that he ever can have at his command. To say that he has not the surgical skill is absurd. Hypodermoclysis, or the injection of salt solution into the loose subcutaneous tissues, is perfectly easy and simple in any private residence. The physician needs a fair-sized aspirating needle (or his hypodermic needle will do) and three feet of good rubber tubing. These should always be in his bag and when occasion arises it is perfectly simple to call for a clean half-gallon stew pan, fill this with clear water and make a normal salt solution by adding one drachm of common table salt to the pint of water. The tube and needle are now placed in this salt solution and both solution and tubing sterilized by boiling for a few minutes. The salt solution can be quickly cooled to a temperature of 105 to 110 degrees F., by placing the vessel in cold water, and the syphon is established by means of the rubber tubing which has been connected to the needle. When the fluid is flowing and all air is expelled from the tube, the needle is thrust

into the subcutaneous tissues of the chest, axilla or abdomen, and from a pint to a quart of the salt solution allowed to slowly run in. This puffs up the skin and forms a tumor, but the solution will absorb rapidly and an abscess will almost never form. The patient revives as by magic, unless his vital processes are at such a low ebb that the solution cannot be absorbed, when intravenous injection will be indicated.

The intravenous injection should not be more formidable to the practitioner. Anybody ought to be able to find a vein in the arm or the leg, and there is practically no danger in looking for it. Having found the vein, a small canula of metal or glass should take the place of the needle used in the method previously described, and this inserted into the proximal end of a vein which has been one-third or one-half divided by a clip of the scissors. The canula is held in place by a ligature previously thrown around the vein and the fluid may flow in rapidly, with, of course, much more rapid effect than could be expected in hypodermoclysis. It is folly to think of either one of these methods as a difficult process, and furthermore, no matter how difficult it may be, it is the duty of every practitioner to understand its use. Should a new specific drug for a cold or pneumonia be placed on the market, every practitioner in the country would prescribe it and, furthermore, his patients would demand it. The use of saline infusions is as specific in its field of usefulness as any drug that we possess.

Salt solution is the one preferred by almost all surgeons, and the addition of the chlorid of calcium and potassium, as in RINGER'S fluid, are found to be unnecessary. Pure water has been used without damage in emergencies. The percentage of salt need not be accurate, and is obtained by adding ʒi of common salt to Oi of water. One to three quarts may be given, and it is well to remember that it is hard to give too much since experiment has shown that 40 to 80 c.c. per minute are not toxic. The temperature in the supply reservoir should be 105 to 107 degrees, in order that the temperature of the fluid may be approximately 100 degrees F., when it enters the vein or subcutaneous tissue. The injection may be repeated a number of times should the patient's condition fail to improve or become worse after a temporary improvement.

There are many cases of hemorrhage where the patient is so completely exsanguinated that it seems the only possible benefit can come from the transfer of oxygen-carrying blood from another man or animal to our patient. Yet, it must always be remembered that in the majority of cases it is impossible for a patient to lose enough red blood-corpuscles to impair the respiratory function. He invariably faints first, because the circulating blood is insufficient to supply the heart, the respiratory centers and the brain. The real need is to furnish enough fluid to suspend the remaining red blood-cells for circulation through the system and restore a normal amount of circulating fluid for the heart and arteries to act upon. As has been said before, a 6 per cent. salt solution answers every purpose of complex solutions that attempt to reproduce the chemic composition of normal blood serum; it is always at hand and easily made; furthermore, it can be boiled for sterilization without changing its composition. The transfusion of blood is entirely abandoned as a dangerous procedure and as one that is inferior to saline infusion even when it works without accident. As previously stated, there are enough red blood-cells left to perform the function of respiration.

In conditions of shock without great loss of blood, the entire nervous mechanism of organic life, according to GROENINGEN, is raised to a maximum stimulation, and the inhibitory centers are paralyzed; the sensations are dulled and the motor functions are suspended; the depraved metabolic processes give rise to a weak heart and respiration and the blood fails to circulate. It is impossible in such a condition of shock to at once restore these over-stimulated nerve-cells from their paralyzed state to one of normal activity, but by restoring the normal volume of blood, nutrition is restored to the cells, there is an increased heart and respiratory function and the metabolic processes throughout the body are restored during the time that these nerve-cells are resting.

We have for our justification of the use of infusion in conditions of septicemia the two important facts of the increased activity of the leucocytes and the increased activity of the skin and kidneys whereby the toxic products may be destroyed or eliminated. There is the further advantage of diluting the poison in the blood.

The exact action of saline infusion in any condition has not been as accurately worked out as the importance of the subject justifies, but whatever it may be, there is no other remedy comparable for the relief of the symptoms of shock and hemorrhage. The changes that take place in the patient are immediately perceptible. There is a restoration of the normal heart action, pulse volume and respiratory function; the unconscious and paralyzed patient opens his eyes, speaks and invariably begins to move. In one to two hours there is a rise of temperature not over 100 degrees F., and there is a diuresis with no albuminuria. Most important of all, the restoration of function is permanent. With such points as these in favor of a remedy it is difficult to see how it can fail to meet with universal practice.

DOUBLE HEADED MONSTERS IN FICTION.

The utilization of pathologic data in fiction has become so widespread that the neglect of the rich field of teratologic conditions must appear rather mysterious. Considering the casuistic discussions of

the marriage of the Siamese twins and of the marital status of the pyopagic (backunited) "Double-Headed Nightingale," it seems strange in these days of realism, that so little use should be made of double-headed monsters in fiction. This appears particularly unaccountable, when the legal, amatory, ethic and marital complications thereon resultant (capable of producing such beautifully intricate plots) are considered. The "Double-Headed Nightingale" was legally decided to be two persons; marriage of one man to whom would result in bigamy. Under certain legal opinions in Illinois, simultaneous marriage with more than one woman does not constitute bigamy in that State. Under this construction of the Illinois statute regulating marriage, the marriage ceremonies must be separate to constitute bigamy. Marriage in Illinois with the "Double-Headed Nightingale" could easily be made a practical simultaneous procedure and hence legal. Under the intricacies of the New York divorce law, a New York marriage could, under certain technicalties, be easily set aside in Kansas, and a second marriage thereafter would be legal. As the first marriage was still legal in New York, a man could easily have two wives in that State without committing bigamy. One half the "Double-Headed Nightingale" could be married in New York and the other (after proper divorce proceedings) in Kansas, both halves being legally wives of the same man in New York. Despite those tempting literary possibilities fiction has neglected this field. BESANT employed, it is true, a double monster, but only as a portent in "For Faith and Freedom." Through the pages of that clever parody, "King Solomon's Wives," flits a double-headed caricature of RIDER HAGGARD'S terrifying Gagaool. With these exceptions, fiction has until lately neglected the fertile literary possibilities of female double-headed monsters.

It was reserved for an Ohio physician to demonstrate the brilliant outlook for fiction in this particular. Dr. W. C. COOPER of Cleves, Ohio, has proven the great value of the double-headed monster in fiction in his "Mystery of the Wetherton Mansion." His heroine is an atlodymus with two heads united at the neck to a single body. This monstrosity is the child of a wealthy judge of Southern Illinois, who is a man of broad, general culture. Dr. COOPER is called to attend the wife of the judge in confinement. Owing to severe dystocia the patient becomes moribund. Whereupon Dr. COOPER performs Cæsarian section, delivering an atlodymus thus described by himself: The heads and necks were entirely distinct, the union of the necks occurring at their junction with the thorax. It was highly probable that tracheæ, esophagi and blood vessels became uniform and common on entering the body. Young as this infant was, it was plainly evident that each head was directly individual. It could be seen too that the child was ambidextrous. There were undoubted signs too that one head bordered strongly on the brunette and the other on the blonde type. They could nurse separately or simultaneously. The only difference was that when both nursed at once the appetite was satisfied twice as quickly as when only one of them was fed. The body was that of a girl.

The Southern Illinois village, where the judge resides, is cursed by the usual spinster gossip, with prurient prudery and mendacity. One of these, loitering around the keyhole of the lying-in room, hears what she considers suspicious remarks by Dr. COOPER. An attack of cholera infantum, due to an uncleansed nursing bottle, calls Dr. COOPER (during the week following the delivery) to the mansion to attend the monstrosity. On his way back to his office he is waylaid by the female "Paul Pry" aforesaid. Injudiciously, but professionally, hoping to check her inquisitiveness, he informs her that the monstrosity is dead, whereupon she has him arrested for murder. Through the judge's influence and cash, the charge is withdrawn. Popular rumor imputes the death of the monstrosity (which is assumed to have taken place) to natural causes. The monstrosity is, however, brought up in the seclusion of the mansion, to womanhood, and carefully trained by a governess sworn to secrecy. The judge, who has not recovered from the shock of the death of his wife and the birth of the monstrosity, finds from growing age and mental infirmity that he needs a private, confidential secretary. A young lawyer named Jack obtains the place, and in most things, the judge's confidence. The secret of the monstrosity is, however, kept even from him. As the judge has exhibited continuously increasing mental depression from the time of his wife's death, his suicide is not a remarkable outcome. The agitation in the household reveals for the first time the existence of the monstrosity to the private secretary. The heads of the atlodymus have been called Alice and Anna.

"Jack falls hopelessly, helplessly in love with Alice. In the innocent frankness of her unsophisticated nature she confesses without a moment's hesitation that his passion is fully reciprocated. Alice and Anna are nearly inconsolable over their father's death. Alice, however, rallies from the shock as time drags by. She has Jack's love to lean on and feed on. Not so with Anna, who being in a decline before her father's death, receives from that calamity a tremendous downward impetus, and has not the tonic of a lover's helpful sympathy and counsels to brace her. It becomes rapidly evident that she is sinking back to God. She is absolutely certain that she can die without involving the death of her sister. Alice herself also feels sure of this. It seems that some infallible intuition guides them to this conclusion. Since her father's death, and especially since Jack's appearance on the scene, Anna becomes positively anxious to die: there is nothing in the world left for her to live for.

However dearly Alice might love her, the conditions were such that life for herself meant wretchedness for her sister. Unless her sister could be happy, she could not. If she should die, two would be perfectly happy. If she should live, three would be miserable. Her intense desire to die no doubt hastened that event, which occurred about two months after her father's death. The necessity for amputation is evident, but Alice insists on holding the corpse two days to comply with the custom of civilized people. Alice makes a quick recovery after the amputation, and her neck rapidly grows into correct relationship to her body. The outcome is a faultlessly beautiful woman, whom "to see is to love."

Her feelings after her separation from her sister, Dr. COOPER (in accordance with the well-known literary canon) leaves to the imagination, for whose assistance the fact is mentioned that the head of the sister was preserved in alcohol to be buried with Alice in the same coffin.

It must be obvious from this résumé that Dr. COOPER has excellently opened a fertile relatively unworked field of limitless possibilities in fiction. He might have instituted a rivalry between the two heads, or might, with the aid of the New York and Illinois statutes, have had a simultaneous marriage. He, however, preferred to blend the older romantic ideas with his fiction, and skilfully employed the self-sacrifice of Anna to relieve the general realistic gloom of the story. What the possibilities for sensational fiction are in this field is shown by the fact of the case reported years ago by a Brazilian physician, where a double-headed male pyopagus fell in love with a single-headed female syndelphus with a double pair of lower extremities and two sets of pelvic organs. It is hoped, however, that future delvers in this field of fiction will emulate the delicacy of Dr. COOPER in their productions.

MEDICAL CONFIDENCES AND MEDICAL TESTIMONY.

The question of medical confidences is a perennial one, and will be till some uniform regulation or understanding is reached in regard to it. It is, moreover, not a subject that can be left exclusively to the ethical sense of our profession; it has its legal bearings entirely apart from what we may or may not consider our individual duty in regard to it, and the question may arise at any time whether as physicians we shall be compelled to state for the benefit of lawyers and their employers what we may have received as confidential communications from our own clients. As the case usually stands, and in most parts of our country, the legal has a decided advantage over the medical profession. In a few States, it is true, there are rigid statutes in this regard, that would even quench the gossip that thoughtless men have sometimes been guilty of, under penalty, but these, like most other statutory enactments, are possibly evadable by clever lawyers, one of whom has said that he never saw a law framed that he could not drive a coach and four through. Where such laws do not exist they have a free hand, and doctors are generally at their mercy.

There is another aspect of the case, and one even less satisfactory, in the fact that there are physicians of reputable standing in the profession, whose sense of medical honor is not sufficiently high to keep them from voluntarily violating professional confidences for a fee, sometimes a pitifully small one at that. Let a case for damages against a railway company be supposed, whether meritorious or not is indifferent to the present question, the defendant corporation naturally seeks in every way to find something to break the force of the plaintiff's claim. This may often be best done by attacking his former health record, and it is not infrequently the case that physicians who have treated him prior to the injury complained of, are found willing and even anxious to go on the witness stand to reveal facts obtained by them in confidence that may be utilized in the defendant's case.

It is not a valid excuse for such a course to say that by it a fraud is prevented, for this implies an absolute knowledge of all the facts down to date, which is rarely possessed by these witnesses, and it is therefore also within the bounds of possibility that by their testimony they are assisting in an act of rank injustice. The only proper professional course would appear to a right-minded man in such an emergency to be to keep out of the case altogether and leave the medical testimony entirely to the corporation's and plaintiff's doctors and experts. Those who are authorized by the parties interested have, of course, a right to testify, but without such authorization it is difficult to characterize the conduct of a physician who reveals voluntarily what he has learned in his professional capacity, and that to his patient's damage, as anything else than dishonorable. Even the advertising specialists, who are reckoned as without the pale of legitimate medicine, have sometimes a higher ethical standard in this respect than some of the so-called regular members of our profession.

Of course there may be occasions when the rule of professional secrecy does not hold in a strictly individual moral point of view. Treason and murder, and some other exceptional conditions might be excluded, and no one would blame a physician if, for example, he should do his utmost to prevent, let us say, the marriage of an innocent female to a man rotten with syphilis or suffering from any form of actively contagious venereal disease. He might under some interpretations of the laws make himself liable for damages, as has actually been the case in France, but there marriage is looked upon more as a financial transaction than it is in this country, and courts conduct themselves accordingly. In such a case, moreover, very much may be done without actually vio-

lating medical confidence, which should be only done as a very last resort, all other means having failed. The physician should, moreover, be sure of his facts and be able to demonstrate them and the honesty of his motives before a judge and jury, as well as to convince them that he had acted with due discretion and had given no needless publicity to discreditable suspicions. The failure in these respects was undoubtedly the cause of the excessive award of damages in the celebrated PLAYFAIR case in England not long since, and a similar result might easily follow like conduct in our own country. Even without special statutes against it the physician, when he violates professional confidence to the damage of his patient, does so at a certain risk.

If such is the case in the general intercourse of man with his fellows, it certainly ought not to be the privilege of the unethical physician to voluntarily reveal the facts entrusted to him before a jury to the intended injury of his former patient, and to do this for a fee, thus dishonorably making a second profit from the confidence entrusted to him. Nor should it be the law that he can be compelled to testify or even allowed to do so in cases where he has not a personal interest involved, as in suits for remuneration or in personal defense of his property or his liberty. In all other cases his knowledge thus obtained should be privileged; professional medical confidences thus gained should be held sacred in courts of law. Where there is now no recognition of this by the courts, legislation should at the earliest possible moment supply the deficiency.

PROGNOSIS OF EPILEPSY.

Epilepsy has been studied more or less diligently for the past three thousand years. Notwithstanding this fact, we are surprised, in the review of the literature, to find how few good general rules there are for a basis of prognosis in this affection.

Since we have established colonies and special institutions for epileptics, we hope to see something done to aid the general practitioner in extricating himself from the predicament of making a prognosis in this disease.

As yet we have to learn of an institution for epileptics in which a department has been established for experimental psychology to be used for the end of a more definite study of epilepsy. When such a department shall be established in connection with these institutions, similar to those referred to by Dr. FREDERICK PETERSON in his inaugural address before the New York Neurological Society, then we shall be able to measure the exact degree of motor, sensory, sensory motor and idio-sensory and motor defects of the epileptic and ascertain to what extent the hereditary element is at fault in the epileptic predisposition. Again, we shall be able to find the state of the mental faculties, how much they have undergone impairment in any single case. When we take into account that an insane epileptic has never yet been known to recover from his epilepsy, we at once see how important such study becomes.

We have reason to believe that the acquired impairment, mental as well as physical, may be separated in a measure, by careful observation, from hereditary impairment so often found in this disease.

Up to the present time sane epileptics have not been brought together in this country in sufficiently large numbers to warrant such thorough studies, but we hope that the Craig Colony of New York State, established at Sonyea, will speedily grasp the importance of such work in a field where comparatively little has been done. We trust that such study will be attended by success and profit to the scientific medical world.

CHOLERA BANDS FOR TROOPS.

In the early days of the Civil War the soldier from the north was not considered to be properly equipped for service in the south without a havelock or white cover of washable material for his forage cap, with a flap falling to the shoulders to protect the head and neck from the scorching sun. Ladies all over the land made these havelocks, but the troops in the field never wore them. On a hot day's march the soldiers put one or two broad green leaves, oak, maple or sycamore in the crown of his cap as an all-sufficient protection. At the present time the havelock seems to have been forgotten, and cholera bands or abdominal bandages have become the imperative necessity, to supply which, for the protection of our soldiers in Cuba and the Philippines against diarrhea and dysentery, the patriotic ladies in many of our cities have been sewing assiduously for several weeks back. It is generally understood among the profession that the flannel bandage has a reputation in tropic climates as a prophylactic for intestinal affections. Professor PARKES in his "Practical Hygiene," states in discussing the causation of diarrhea and dysentery that in almost all hot countries chilling of the abdomen is considered particularly hurtful, and shawls and waistbands are usually worn, giving as an instance the cummerbund of India; but it is difficult to understand how this knowledge became popularized so quickly, and with such practical results at the present time. Various patterns have been used. The simplest consists of an apron of flannel, six or seven inches in length, tied around the waist with tapes. Others are more elaborate, fastened with buttons, hooks and eyes or eyelet-holes and laces; but whether the men will treat them as their fathers treated the havelocks appears as yet to be unknown. The subject, however, will soon be ventilated and placed upon an official footing, for a board of medical officers has been appointed by the War Department to meet in Washington, D. C., for the purpose of considering the question as to whether

or not the Government should issue the so-called "cholera bands" for the use of United States troops in the field, the idea apparently being that if the bands are essential to the welfare of the men their supply should be furnished officially, and not be left to voluntary contribution. The board consists of Colonel DALLAS BACHE, Assistant Surgeon-General, Lieutenant-Colonel CHARLES SMART, Deputy Surgeon-General and Major WALTEY REED, Surgeon.

CORRESPONDENCE.

Pottery Evidences of Leprosy.

NEW YORK, July 20, 1898.

To the Editor:—I send you a translation from the *Dermatologische Zeitschrift*, May, 1898, on Huacos pottery evidences of leprosy in pre-Columbian America, a continuation of the discussion on my paper, "The Question of Pre-Columbian Leprosy in America," and my photographs in the Berlin Lepra Conference. Dr. Glück entirely agrees with me that these Peruvian figures show no characteristics of leprosy. (*Vide* "Pre-Columbian Leprosy," JOURNAL OF AMERICAN MEDICAL ASSOCIATION, April, May and June, 1895.) Virchow, in his position, is clearly wrong. ALBERT S. ASHMEAD, M.D.

LETTER OF MR. COUNSELOR OF SANITATION AND CHIEF PHYSICIAN, DR. LEOPOLD GLÜCK, IN SERAJIVO TO THE DERMATOLOGISCHE ZEITSCHRIFT (PROF. LASSAR'S PAPER), BERLIN.

". . . Mr. Polakowsky was kind enough to send me a reprint of the Berlin Anthropological Society of what Virchow says about the morbid representations on old Peruvian pottery. In the last of the communications, of Dec. 18, 1897, Mr. Polakowsky refers to my humble person, saying: 'You will find three papers about the leprosy of the nose in the first volume of the communications of the Lepra Conference. Among them there is also a great work of Dr. Glück, chief physician of the lepra hospital in Serajivo. This gentleman said to me, after the October meeting, that I had been quite correct in my judgment that these vases did not represent leprosy. He asks me to say at the next opportunity, referring to himself, that the nasal leprosy has another aspect, that the bridge of the nose sinks, that the openings of the nose are closed, that the wings of the nose swell considerably, giving the idea of a opera-glass; these are the *ipsissima verba* of Dr. Glück. Dr. Leloir, one of the first leper physicians, who died prematurely, uses the same designation.' It is correct that after the meeting of the Berlin Anthropological Society, Oct. 16, 1897, at which I assisted, on the invitation of Dr. Virchow, as a guest, I have declared to Mr. Polakowsky that these vases represent no leprosy; it is likewise true that I have spoken with the said gentleman about the deformations of the nose in lepers, but I can not remember whether I have mentioned then, only the opera-glass nose, or also the other deformities of this organ. At any rate I want to declare here that I distinguish not one, but three types of nasal deformities on leprosy, as appears from my report published in the first volume of the Transactions of the Lepra Conference: '*Leprosy of the upper respiratory and digestive tracts.*'

"But it was not the defects of nose and lips alone which compelled me to believe that the vases did not represent leprosy. In considering those vases, I asked myself what form of leprosy we could have here? The faces of the fingers show no vestige of leontiasis; the tips of the ears are neither thickened nor elongated; the hands are not swollen, therefore we can exclude lepra tuberosa, especially as extensive mutilation of the inferior extremities never occurs in this form of leprosy. It could then only be lepra nervosum sen anesthetica. It is true, I know neither by the literature nor by personal observation any case of lepra nervosum in which the tip of the nose and of the septum, as well as the upper lip, have perished; yet this would not be impossible, especially if one considers that paralysis of many facial nerves, with consequent inflammations and ulcerations of the skin, are not particularly rare in this form of leprosy. The mutilations (?) of the legs, it is true, do not occur frequently either, in the form which is represented in our vases; but this is also possible in lepra anesthetica. But now the hands of the figures show absolutely nothing abnormal, which alone speaks quite decidedly against the assumption of leprosy.

"It may happen here and there, now and then, that the affections on the legs are more advanced than on the hands, but it is entirely improbable that the latter, in such a later stage of disease as that represented on the figures, could remain entirely intact. The muscular atrophy and the contractions of the fingers are, in all cases of lepra nervosum which have reached any considerable degree of development, manifestations so conspicuous and characteristic, that the old Peruvian artists would certainly have been aware of them.

"Finally, as to the legs, I see in them no mutilations, but amputation-stumps, as those which remain after a regularly executed amputation of the leg. The stump has a smooth hemispherically-shaped extremity, deep, horizontal or vertical furrows, which must be considered as retracted scars after flap amputation on the legs.

"If we consider all these facts, one becomes convinced that the old Peruvian potteries which Virchow, on the 13th of October, 1897, has demonstrated in the third sitting of the Lepra Conference, and which afterward have repeatedly been the object of debate in the Berlin Anthropological Society, certainly represent no leprosies.

"It must be left to the investigator of the old Peruvian civilization to explain in a positive manner the meaning of the vases in question, that is, of the figures which adorn them; the leprologist can do that only in a negative manner, by declaring that the affections which are apparent in them can certainly not be considered as leprosy."

A Department of Health.

CHICAGO, July 28, 1898.

To the Editor:—Congress adjourned, and with the knowledge presumably (see reports of Senator Gallinger and others, from personal observations made while investigating certain parts of Cuba last spring of the great need and urgent necessity of reform in sanitary matters among the unhappy people of that desolate island) or oversight, that legislation upon this all important topic was *apparently either relegated to the waste-basket, pigeon-holed or deferred.* Call it by whatever term we will.

For years the writer, in his feeble efforts, has tried to use what influence he possessed to promulgate argument, why our government should establish a department of health, having at its head an efficient, painstaking, scientific medical secretary. A large majority, perhaps 90 to 95 per cent., of the medical profession throughout our country have favored this project. The JOURNAL has repeatedly published the same views. The great majority, as just stated, of the noble men in our profession favor this, and as such are good samaritans (not for self aggrandizement, as possibly some might interpret, but for "the welfare of our people"), and our National legislators should have listened to our appeal, *i. e.*, paid heed to the bill prepared by the special committee of the AMERICAN MEDICAL ASSOCIATION upon this timely measure. Congress, in my opinion, will doubtless do so in due time; but, in my judgment, this much-needed legislation should have been enacted years ago. Had this been done, an intelligent commission,

composed of medical scientists from the United States, would doubtless long ago have been detailed to visit the Philippine Islands, the Canary Islands, the Ladrones, and other Spanish territory, and report upon the *statum praesens* of the diseases that prevail or are indigenous to those islands, and upon the sanitary and other conditions existing among the inhabitants. A full knowledge of the sanitary conditions of Manila, Santiago, San Juan, Porto Rico, the city of Ponce, Havana, and of all other portions of those pest-ridden cities, and in the islands named, would have been officially known, not omitting, of course, Honolulu, the East Indies, etc., as well as scores of other places that might be enumerated.

This brings the writer to mention that the hardships and suffering, by illness and otherwise, of our brave soldiers at the front would doubtless have been greatly mitigated and unknown numbers of our brave sons saved from death by yellow fever, if such a branch of our Government had been established. Indeed, is not this a crying necessity? Is this not, *Jure humana et Jus divinum?* Very sincerely yours,

LISTON H. MONTGOMERY, M.D.

The Probate Court.

CHICAGO, July 30, 1898.

To the Editor:—I am glad to see Dr. Galloway has the courage to relate his experience with Judge Kohlsaat. It probably coincides with the experience of the majority of physicians who are so unfortunate as to be obliged to prove their accounts in tho probate court.

Some months ago I filed a claim against an estate in which the executrix was willing to allow the claim at $8 a visit, and Judge Kohlsaat arbitrarily cut the claim down to $2 a visit, not inquiring into the circumstances of the case but remarking that the court would never allow a claim for more than $2 a visit. I admire a judge who looks sharply after the interests of heirs, but think it is time we as physicians should take a hand in the election of the probate judges and try and secure the election of judges who will give us just fees and not humiliate us in court. Yours truly.

JOHN A. ROBISON, M.D.

PUBLIC HEALTH.

Behring's Tetanus Antitoxin has a record to date of eleven recoveries and eleven deaths, according to the *Munich Med. Woch.* of May 24.

Sanitation of Match Factories.—The recent agitation in France has resulted in the production of a sanitary match paste which contains none of the dangerous white phosphorus and is harmless alike for the workmen and the public. It is claimed that the new matches made with it are more than satisfactory.

Tubercle Bacilli can be readily detected in milk by adding a few drops of peroxid of hydrogen to a sample of the milk in a test-tube and then a few drops of parraffinglecadiamin, $C_6H_4 2(NH_2)$. The color of the milk remains unaltered unless it contains tubercle bacilli, when it at once turns a grayish-green on being shaken.—Professor Storch: *St. Petersb. Med. Woch.*, June 11.

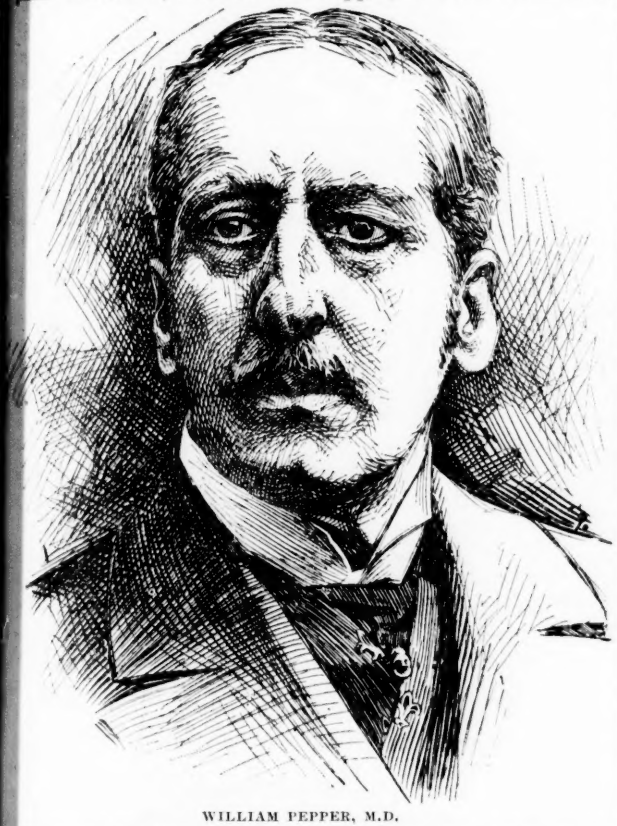
Doctors Opposed to Marine Hospital Extension.—John B. Corliss has run afoul of the medical fraternity. He has, in a euphemistic way, called Dr. C. Henri Leonard a liar, and the Doctor does not like it. Besides, the several medical associations think that Corliss has not acted square on their pet measure of a department of health. The agitation for such a department was started about six years ago, by the AMERICAN MEDICAL ASSOCIATION. It was proposed to make the secretary a cabinet officer, to have the Federal Government exercise control over the hygienic condition of the country and over intercourse with other nations. President Cleveland recommended the measure in one of his messages, and the doctors have been driving at it since. During the session of the Michigan State Medical Association last May, it transpired that Corliss was pushing some health bill. It turned out to be the "Hepburn bill," which enlarges the scope of the Marine-Hospital Service. The doctors have no use for this measure, and adopted condemnatory resolutions, which were sent to Corliss. Corliss wrote back that the medical fraternity had acted without proper investigation; that it was his "duty" to report the Hepburn bill; that the bureau scheme would be a "very large expense." He trusted Dr. Leonard would "undo the evil" he had created by the publication of "facts not true." This made Leonard hot. He replied that Corliss had quibbled, and warned him that the Hepburn bill was distasteful to the entire medical fraternity. He criticised Corliss' plea about "expense" and reminds him that the doctors may conclude that some Congressmen are too "expensive." This correspondence was published in the medical journals and evoked a letter to Leonard from Dr. Wingate, chairman of the Public Health Committee of the AMERICAN MEDICAL ASSOCIATION, in which he says that Corliss obstinately favors the Hepburn bill, and that he simply would not listen to arguments for any other measure. Dr. Wingate intends to place the entire correspondence in the hands of Senator Spooner and Congressman Otjen, strong friends of the department bill. Corliss will have more explaining to do than he had with the ticket-brokers when he found himself in a somewhat similar position. — *Detroit News*, June 26.

The U. S. A. Hospital Ship "Relief."—The finest hospital ship that ever floated is the *Relief*, just fitted out at the Brooklyn Navy Yard, under the charge of Surgeon George H. Torney, U. S. A. The result is a great credit to that officer, who has given his personal attention to every detail of construction. The *Relief* was formerly the steamer *John English* (*Vide* JOURNAL, July 2 p. 42) plying between New York and Portland. There are two wards on the promenade deck, fore and aft; two on the main deck, and another on the after berth-deck. Not less than 350 patients can be accommodated in the five wards as now arranged, and by the addition of extra cots it is estimated that 500 wounded men could be cared for in an emergency. The officers' ward is forward on the main deck, and does not differ materially from the others. On the after main deck is the surgical ward, and adjoining this is a good-sized and well-lighted operating-room. In it are three operating-tables and two cabinets for surgical instruments. The entire interior of the vessel is finished in white enamel paint with gold trimmings. The floors of the wards and operating-room are covered with rubber tiling. The cots are of iron, painted white, and most of them have an upper and a lower berth, arranged like a sleeping-car section, to accommodate two patients. In each ward are baths fitted with the Gegenstorm system of hot and cold water, by means of which water may be drawn and kept at any temperature desired, by simply turning a lever above tub. The plumbing is said to be the finest ever put on board a ship. On the berth deck are staterooms to accommodate fifteen male and fifteen female nurses, and forward are the roomy and well-lighted officers' quarters. The ship carries a disinfecting plant, an ice-plant capable of producing 200 tons a day and an electric plant which supplies power for incandescent lights throughout the vessels and also for a 7000 candle-power search light, which is operated from the pilot-house. In addition to this all the wards and the quarters of the officers and the nurses are provided with high-power electric fans, which are expected to cool even the heated air of Cuba. A small portion of the after promenade deck has been left open at the sides, and here hammocks are to be swung for the benefit of convalescent patients. Besides the appliances already enum-

vated, the *Relief* has a carbonater for supplying mineral water, two X-ray outfits to aid the surgeons in locating bullets, a microscopic laboratory, and a well-equipped photographic dark room. On the main deck is a telephone, by means of which communication may be established with the shore or with other vessels. The ship carries eight life-boats, four life-rafts and two 28-foot steam launches. Her exterior is painted white, except for an olive-green band which will encircle the vessel, in accordance with the requirement of the Geneva convention. An apparatus has been devised by means of which the sick or wounded may be hoisted on board with the least possible trouble. This consists of a steel boom, which can be swung over the deck of a war-ship, and is fitted with tackle for hoisting.

NECROLOGY.

WILLIAM PEPPER, M.D., the friend of young men, is not now numbered among the living. He has been cut down in the height of his glory. When word came from California, whither he had gone for a brief respite from his labors, announcing news of his death from angina pectoris, it fell like a pall over the hopes and ambitions of many men in Philadelphia. His father, the elder Dr. Pepper, was one of the emi-



WILLIAM PEPPER, M.D.

nent men of his time, and therefore, by birth and by nature, his advent into the world was distinguished. Dr. William Pepper was born in Philadelphia, Aug. 22, 1843. His early life was one of progress, and his whole career one of work and usefulness. The keynote of his success was intuition, tact, persistence and constant application. No doubt he would have succeeded in any profession he might have chosen. Dr. Pepper graduated from the University of Pennsylvania when 19 years old and at the age of 23 received the degree Doctor of Medicine. From that time onward his life was devoted to utility and to the elevation of his profession. At the age of 25 he became professor of pathology of his Alma Mater and of his beloved college. In 1840 he was made professor of clinical medicine and at the age of 33 succeeded Dr. Alfred Stille as professor of theory and practice of medicine in that institution. In 1881 he was elected provost of the University and resigned in 1894. His administration was marked by unparalled success. If you wish to see evidences of his genius in Philadelphia "look around you." From a university of modest proportions, he built one which now covers fifty-two acres of ground, and aggregating, all told, $5,000,000 in value. Dr. Pepper has given hundreds of thousands of dollars to the University. Under his administration there arose the Wharton School of Finance and Economy (1881), the Department of Philosophy for Post-Graduates (1882), the Department of Veterinary Medicine (1883), the School of Biology (1885), the Department of Physical Culture (1885), the School of American History (1891), the Department of Archeology and Paleontology (1891), and the Department of Hygiene (1892). He was instrumental in building the Agnew Memorial Wing to the University Hospital, the Maternity Hospital, the Wistar Institute of Anatomy, and he built and endowed the William Pepper Laboratory, a memorial to his father. His fervent hope was that the University should outrival the colleges of the old and new world. In the medical department his efforts have always succeeded, and his endowment of $50,000 made this University one of the leading spirits among all others in requiring a four-year graded course. He brought together in this teaching faculty many of the foremost men of his day. Agnew, Leidy, Wormley and Goodell are gone, but there yet remain Wood, Ashhurst, White, Tyson, Piersol, Reichert, Penrose, Hirst and Abbott among the living. He not only gathered to this center the older men, but also looked to younger men to perpetuate it when others are gone. He gave them encouragement and they honor him for it. Always showing an intense zeal for his work, he animated others who came under his direct teaching. A man of keen perception, a wonderful judge of human nature, and of profound learning, he was bound to succeed. As a diagnostician, possibly no man was his superior. His mind was ever alert, ready to grasp the hidden thoughts of the patient and to detect the varied pangs of disease. He was artful to a wonderful degree and elicited symptoms which often defied the senses of others. His talents secured his reputation and his private practice was immense. As a lecturer he had few equals. His language was clear and his phrases most plain. He had a faculty of readily imparting the knowledge which his energies had brought him and they were untarnished when he imparted them to others. Dr. Pepper's talents were versatile and his great vitality gave him no rest. He was constantly reaching out for other useful fields than medicine. He was a man of executive ability, an organizer, as shown by the establishment of the Philadelphia Museum, of the School of Industrial Art, and many public enterprises. He was a leader in the American Society for the Extension of University Teaching, and always exercised an interest in all public measures which brought good to his fellow-man. Dr. Pepper's reputation was not merely local; his name is known throughout the medical world. He had been knighted by the King of Sweden and received the degree of LL.D. from both Lafayette and Princeton. As a writer he is well known. Who has not heard of Pepper's "System of Medicine, and of the "Diseases of Children" by Meigs and Pepper? A visitor to his office would always find him occupied, and this incessant toil sowed the seeds which at last broke him down. An attack of la grippe last year left its mark upon him, which a journey to Florida never relieved. His manner was kind, gentle, wholesouled, and his demeanor always suave, frank and affable. He made friends readily. His name has been honored by his native city and State, by the two Americas, being president of the first Pan-American Medical Congress, and by the Old World, and at the age of 55, lacking one month, his life work has ended. His friends are many and their grief is made the more profound since death

came when so far away from them and from the city which will do honor to the name of William Pepper for generations to come.

HENRY E. DIETRICH, M.D., 422 Center Street, Chicago, died at a private sanitarium near Milwaukee, from nervous troubles, the result of a runaway accident several years ago, July 22, aged 48 years. Dr. Dietrich had practiced here for fifteen years, was a native of Switzerland and a son-in-law of the president of the Swiss Republic, Carl Schenck. He studied in Zurich, Berne, Heidelberg, Prague and Vienna. In 1877 he came to America and went to Yankton, S. D., where he practiced until 1880, then coming to Chicago.

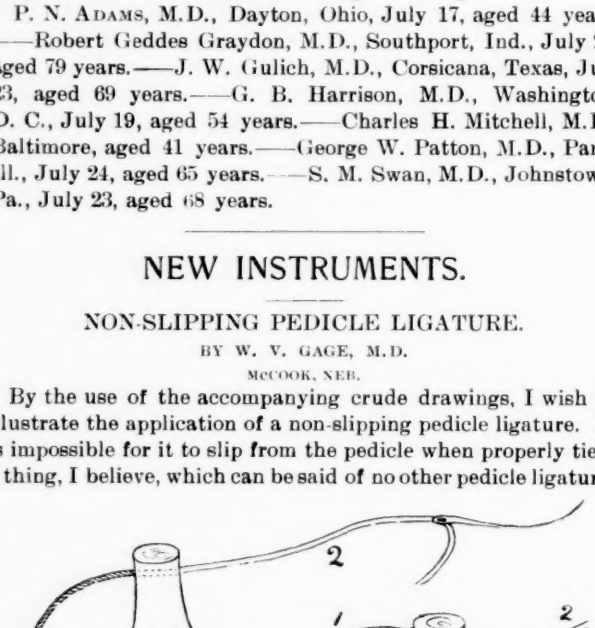
P. N. ADAMS, M.D., Dayton, Ohio, July 17, aged 44 years. ——Robert Geddes Graydon, M.D., Southport, Ind., July 23, aged 79 years.——J. W. Gulich, M.D., Corsicana, Texas, July 23, aged 69 years.——G. B. Harrison, M.D., Washington, D. C., July 19, aged 54 years.——Charles H. Mitchell, M.D., Baltimore, aged 41 years.——George W. Patton, M.D., Pana, Ill., July 24, aged 65 years.——S. M. Swan, M.D., Johnstown, Pa., July 23, aged 68 years.

NEW INSTRUMENTS.

NON-SLIPPING PEDICLE LIGATURE.

BY W. V. GAGE, M.D.
McCOOK, NEB.

By the use of the accompanying crude drawings, I wish to illustrate the application of a non-slipping pedicle ligature. It is impossible for it to slip from the pedicle when properly tied, a thing, I believe, which can be said of no other pedicle ligature.



The grasp of the ligature is limited, but by repeating the tying process a pedicle of any size could be securely held, or the entire broad ligament tied off. Let Fig. A 1 represent the pedicle. Through it is passed the ligature, on each end of which is threaded a needle, the projecting ends being numbered 1 and 2. No. 1 is passed entirely around the pedicle under the point of exit of No. 2 and looped into itself from below, at its own point of exit, as shown in Fig. A 2. Both ends are now drawn tight, No. 1 held snugly and No. 2 passed through the tissue, at a point about one-eighth of an inch below where No. 1 goes around the pedicle, emerging the same distance below on the other side, both ends are again drawn taut enough to control any bleeding that may be present and the ends tied. Although the description of this method of ligation may be somewhat obscure, the method of applying the ligature is simple, as you may demonstrate by using a piece of roller bandage about one-fourth of an inch through, for an imaginary pedicle, and applying the ligature yourself.

A THREADED NEEDLE-HOLDER

exhibited at the German Congress of Surgery is a perforated board with a two-inch wall along each side. The threaded needle is passed through corresponding holes in each wall and the thread tied. Two dozen can thus be fastened and the whole sterilized at once. The needles are used in turn, cutting each knot separately, and if a needle-holder is used to insert the needle, instead of the fingers, the chances for stitch hole infection are reduced to the minimum. Needle-holders are being used more and more abroad. A useful model is illustrated in the *Cbl. f. Chir.* of July 2. One of the handles ends in a ring that slips over the little finger, from which the pincers hang when not in use. The other handle is merely a short curved crossbar for the thumb. The jaws hold the needle slanting in the proper position.

BOOK NOTICES.

System of Diseases of the Eye, by American, British, Dutch, French, German and Spanish authors. Edited by WILLIAM F. NORRIS, A.M., M.D., and CHARLES A. OLIVER, A.M., M.D Vol. iii. Local diseases, glaucoma, wounds and injuries, operations. Pp. 962. Philadelphia: J. B. Lippincott & Company, 1898.

The contributors to this volume are: Charles Steadman Null, M.D.; George C. Harlan, A.M., M.D; Samuel Theobald, M.D.; Swan M. Burnett, M.D., Ph.D.; W. A. Brailey, M.D.; Sydney Stephenson, M.B.; A. Hill Griffith, M.D.; Isidor Schnabel, M.D.; Joseph Schobl, M.D.; Johann Deyl, M.D.; Priestley Smith, Esq.; Emil Gruening, M.D.; Robert L. Randolph, M.D.; Herman Knapp, M.D. The translators are Charles H. Reed, M.D., Adolf Alt, M.D., Robert Sattler, M.D. The illustrations in this work are magnificent, and the publisher has spared no expense to produce a first-class work.

A Manual of General Pathology for Students and Practitioners. By WALTER SIDNEY LAZARUS-BARLOW. Pp. 795. Philadelphia: P. Blakiston Sons & Company, 1898. [From E. H. Colgrove, Chicago Agent.] Price, $5.00.

This is an attempt to separate general pathology from pathologic anatomy and to condense the subject of general pathology into a simple volume. The work is divided into 14 chapters, as follows: 1. Introduction. 2. Vegetable Micro-Organisms. 3 and 4. Pathology of the Circulation. 5 and 6. The Pathology of the Blood. 7 and 8. Pathology and sequels of Inflammation. 9. Pathology of Infection. 10. Pathology of Heat Regulation. 11. Pathology of Shock and Collapse, Transfusion. 12. Pathology of Nutrition. 13. The Pathology of Various Morbid Conditions which are Characterized by Abnormalities of Secretions and Excretions. 14. The Pathology of Respiration. These chapters are followed by an appendix in which is discussed ptomain poisoning; life under aseptic conditions; fragmentation of the heart; death from certain causes, such as extensive burns; drowning; death from thirst and lightning. There is also an index of authors and a copious general index.

The work is dedicated to Joseph, Lord Lister, and was primarily intended for students as a recitation book, and for that purpose is excellent, and it will be found of great value to those practitioners who wish to keep abreast with the times in the great science of pathology.

Inflammation of the Bladder and Urinary Fever. By C. MANSELL MOULLIN. Pp. 153. Philadelphia: P. Blakiston Sons & Company, 1898. [E. H. Colgrove, Chicago Agent.] Price, $1.50.

The author states as a reason for the publication of this book the fact that the principles of aseptic surgery seem still to stand in need of an advocate when the bladder is concerned.

The book discusses the predisposing cause of cystitis; the cause and classification of cystitis; simple and suppurative cystitis; the changes in the urine in suppurative cystitis; the organisms found in the urine in suppurative cystitis; symptoms of suppurative cystitis; urinary fever; the way in which

micro-organisms gain access to the bladder; the treatment of suppurative cystitis; cystitis due to specific organisms.

Moullin is well known through his system of surgery (which has had a wide circulation in this country) as a practitioner of ability and vast experience. The monograph under consideration is one deserving of the highest consideration. We commend the work to our readers.

A System of Practical Medicine by American Authors. Edited by ALFRED LEE LOOMIS, M.D., LL.D., and WILLIAM GILMAN THOMPSON, M.D. Vol. iv. Pp. 1120. New York and Philadelphia: Lea Bros. & Company. 1898.

The contents of this volume are: Diseases of the Peripheral Nerves; Diseases of the Spinal Cord; Diseases of the Medulla and Pons; Diseases of the Brain; Functional Nervous Disorders; Vasomotor and Trophic Disorders; Disorders of the Mind; Diseases of the Muscles, and miscellaneous subjects not specially mentioned in this and the preceding volumes.

The contributors to Volume iv are: Frederick Finley, M.D.; M. Allen Starr, M.D.; Christian A. Herter, M.D.; D. D. Stewart, M.D.; J. T. Eskridge, M.D.; F. T. Miles, M.D.; F. X. Dercum, A.M., Ph.D., M.D.; Frederick Peterson, M.D.; Charles L. Dana, M.D.; William H. Thomson, M.D.; James J. Putnam, M.D.; Charles K. Mills, M.D.; Morton Prince, M.D.; W. Gilman Thompson, M.D.; Wharton Sinkler, M.D.; Hames Stewart, M.D.; William B. Pritchard, M.D.; William Noyes, M.D.; Landon Carter Cray, M.D.; Pearce Bailey, M.D.; A. Jacobi, M.D.; and Warren Coleman, M.D.

This work is handsomely printed and the contributors have ably represented American medicine.

Transactions of the Academy of Stomatology. Paper. Illustrated. Pp. 83. Philadelphia: J. B. Lippincott Co. 1898.

This volume covers the period from Jan. 26, 1897, to Dec. 28, 1897, and is reprinted from the *International Dental Journal*: is well printed on excellent paper and is of value, especially to practitioners of this branch of medicine.

Studies From the Department of Pathology of the College of Physicians and Surgeons, Columbia University, New York City. Volume v, Part 2. Paper. Illustrated.

This volume of studies comprises a collection of reprints of the more important articles published by the workers in the department of pathology in this institution during the college year 1897-98. The volume is gotten up in the usual excellent style noted in Columbia University publications, and contains the following papers of interest to the medical profession: "An Experimental Study on the Therapeutic Value of Bloodletting;" "Studies of Ganglion Cells;" "Suture of the Cornea after Removal of the Lens;" "A Case of Acute Leukemia;" "Further Studies (third series) on the Gonococcus (Neisser);" "A Modification of Cullen's Method of Preparing Fresh Sections for Microscopic Work;" "On the Occurrence of Typhoid Fever without Characteristic Lesions of the Small Intestine;" "The Bactericidal Action of Lymph Taken from the Thoracic Duct of the Dog;" "On a Method of Isolating and Identifying Bacillus Typhosus, Based on a Study of Bacillus Typhosus and Members of the Colon Group in Semisolid Culture Media," and "Some Laboratory Moulds."

Seventeenth Annual Report of the State Board of Health of New York. Cloth. Pp. 620. Maps. New York and Albany: 1898.

This report is for the year 1897, contains the rules and regulations for sanitary protection of water supplies of various cities, and reports of a number of special investigations in various cities, on sanitary matters. The report is accompanied by a large number of maps, twenty-four having to do with sewer systems and sewerage disposal works.

Transactions of the Medical Society of the State of California. Cloth. Illustrated. Pp. 352. Vol. xxviii. Published by the Society.

The volume is printed on excellent paper and has to do with the twenty-eighth annual meeting held at Fresno, Cal., in April, 1898, and, besides the proceedings, contains a biography of the President, Cephas L. Bard, his annual address, and reports of various committees, as well as the committee on clinical medicine, serotherapy, medical typography, etc.

SOCIETY NEWS.

American Electro-Therapeutic Association.—The eighth annual meeting of this association will be held on Sept. 13, 14 and 15, 1898, at Buffalo, N. Y. There will be an exhibition of electric apparatus for diagnostic, therapeutic and radiographic work; a handbook of information will shortly be issued by the Committee on Arrangements. Hotel Iroquois will be the headquarters; John Gerin, M.D., secretary; Charles R. Dickson, M.D., president.

Post-Graduate Medical Schools.—At the regular meeting of the Alameda County Medical Society the following resolutions were adopted:

WHEREAS, It having come to the knowledge of this association that the post-graduate medical schools of Chicago, New York and Philadelphia are permitting the matriculation of irregular practitioners of medicine; therefore, be it

Resolved, that this association voices its denunciation of this lax practice as subversive of the distinction heretofore rightly made between regular and irregular practitioners of medicine.

As regular students have been denied advanced standing in regular student bodies, we are further

Resolved, That the permission granted them, after graduation, of matriculation in regular post-graduate schools tends to discourage the standard heretofore obtaining in our regular colleges.

Resolved, That this association point out the injustice done regular practitioners in permitting the matriculation of irregulars in post-graduate schools, as they are there drilled in practical work, in manual technique, without regard to scientific acquirements; and they are, in some instances, thus enabled to compete successfully in private practice with men who were obliged to reach a higher standard of scientific attainment before being granted diplomas, and who have not had the leisure or the money to supplement graduate with post-graduate study.

Resolved, That it is the hope of this association that this matter receive the attention of other medical societies, and of the profession in general, to the end that so strong a feeling may be formed against this abuse that the governing bodies of the offending schools may be moved to correct it.

E. J. OVEREND, M.D.,
S. H. BUTEAU, M.D.,
Oakland, Cal., June 14, 1898. Committee.

MISCELLANY.

Recurring Tubal Pregnancy.—O. Falk reports a woman of 29 years operated on twice successfully for ruptured tubal pregnancy, one on each side.—*Munich Med. Woch.*, May 31.

"The Tonsils an Open Gate for general acute infection" is the subject of an article in the *Munich Med. Woch.*, June 7, from F. Jessen, who confirms the statements of American writers.

Professor Albert's Rule in regard to mutilating operations on either male or female: "Castrate your neighbor only as ye would that others should castrate you."

A Large Primary Sarcoma in the Omentum was removed by Henricius recently from a girl of five; fatal recurrence in a few months.—*Cbl. f. Chir.*, June 2.

Botulismus Antitoxin.—Kempner has produced an antitoxin from bacilli found in the fecal matters of pigs, that protects against fatal doses of botulin derived from the bacillus botulinus.—*Ztscft. f. Hyg.*, xxvi, 3.

Intermittent Exophthalmus and Endothalmus.—A peculiar case is described in the *Deutsch Med. Woch.*, No. 24, evidently caused by varicose dilation of the vena ophthalmica, exaggerated by stooping and by the menses.

Flexion of the Uterus and its accompanying pains are attributed by Schaffer to anomalies in innervation producing convulsive contractions in the posterior wall.—*Monatsheft f. Geb. u. Gyn.*, January.

Hospital for Red Cross.—Henry M. Flagler, the Standard Oil millionaire, will, it is alleged, build a hospital at Miami, Fla., for the Red Cross, to accommodate 1,000 patients. The cost of the building will be $40,000.

Gift to Harvard Medical School.—The late James Stevenson of Brookline, Mass., a wealthy hotel owner and real estate dealer, has promised in his will $10,000 for the establishment of two free scholarships.

The Value of Vaginal Disinfection in childbed can only be decided when the temperature is noted every two hours. Kalmus urges the general adoption of this practice to decide this important question.—*Cbl. f. Gyn.*, No. 19.

The Tomato as a Cause of Cancer.—A N. Y. contemporary gravely publishes the statement that the tomato, eaten in any form, can not cause cancer. The doctrine of signatures explains away the difficulty and there are still extant many pathologic plates which suggest decided similitudes.

National Relief.—The National Relief Committee reports from New York City some generous contributions, among which was one by Mr. D. O. Mills of that city for $5000, to assist in the establishment of ice-producing plants at Jacksonville, Key West, Jekyl Island and Santiago or Guantanamo Bay.

The Bacillus of Whoopingcough.—Spengler and Davos, *American Med. Surg. Bulletin*, have isolated a bacillus of whoopingcough which resembles the Pfeiffer influenza bacillus. This is probably the same organism as that of Czaplewski and Hensel (*vide* JOURNAL, Jan. 29, 1898, p. 280.

The Proportion Between the Prostate and the Testes in various vertebrates indicates that these organs partially substitute each other, as in animals with large testes the prostate was extremely small, while with small testes the prostate was exceptionally large.—Disselhorst, *Munich Med. Woch.*, May 24.

The Cure of Glaucoma by Resection of the Superior Cervical Sympathetic Ganglia is reported by Jonnesco, who has performed the operation seven times for this purpose and found the improvement marked and progressive, even in cases that had resisted iridectomy.—*Presse Méd.*, June 8.

A Small Epidemic of Meningitis Cerebrospinalis has been noted recently in Paris, occurring in scattered localities, showing no evidence of direct contagion, as the microbe is enclosed in the skull and spinal cavities. The nasal or aural passages are considered the most probable routes of infection.

Radiography in Dental Surgery has been much improved by the use of the radio condenser (JOURNAL, xxx, 988) and "metallic rubber." Some interesting radiographs were recently presented at the Paris Acad. de Méd., among them some that showed the fully-developed canines buried deep in the palatine arch, with no possibility of eruption.

The Resistance of Pathogenic Germs in a Fatty Vehicle to the Gastric Juice has been demonstrated by the Italians. Mixed with fat, oil or butter, typhoid, cholera, anthrax bacilli and Fraenkel's diplococci remained unaffected by fresh gastric juice indicating that they pass intact into the intestines.—*Munich Med. Woch.*, June 21.

An Instructive Case of Eclampsia is reported by Vinay, the patient apparently in the seventh month, IV-para, the eclampsia of the most severe type, child apparently dead. The patient recovered after artificial delivery followed by the injection of three liters of salt solution, with the patient kept under the influence of chloroform several hours, taking 300 grams of chloroform in all.—*Klin-therap. Woch.* June 19.

Sero-reaction and Immunity.—A communication to the Paris Académie de Méd. states that although Arabs are rarely affected by typhoid fever, examination of the blood of twenty-three subjects failed to show any sero-reaction; which is a new proof that the agglutinating power is not necessarily connected with immunity, but is an infection, or defense reaction.

Peritoneal Adherences do not follow thermocauterizing unless there is simultaneous infection, Ten Brink asserts as the result of numerous experiments on guinea-pigs. The infection of the cauterized spot with staphylococci resulted in adherences eight times out of nine. He is confident that these conclusions will apply also to man.—*Munich Med. Woch.*, May 31.

Psychosis Consecutive to Iodoform Treatment.—Frankenburger reports a patient of 50 years treated with iodoformol-glycerin injections (6 weeks, 4, each 0.5 gram. iodoform) for a cold abscess in the thigh, which healed, but a psychosis developed, with melancholia, mania of persecutions, disturbed sight and hearing, etc., which persisted long after cessation of the injections and required removal to an institution.—*Munich Med. Woch.*, May 31.

Pain in the Bones after Extirpation of the Spleen has been observed in a recent case operated by Lucetti. The pain was intense, especially in the diaphyses of the long bones. There were no other unusual phenomena; the glands did not swell, and the pains were evidently merely the results of the sudden vicarious demands upon the blood-manufacturing bones.—*Munich Med. Woch.*, June 7; *Giorn. Intern.*

De Renzi's Treatment of Pneumonia.—Fanoni, in the *New York Medical Journal* of May 7, claims for this treatment that it increases the strength and rapidly diminishes the fever. He considers it a remedy of undoubted efficacy, as indicated in the diseases caused by Fraenkel's bacillus, namely, epidemic cerebro-spinal meningitis, pleurisy, pericarditis, peritonitis, the arthritis of pneumonia, etc.

Diphtheria of the Scrotum.—Dr. le Clerc of Brussels has observed three cases of diphtheria in which the local process was confined to the scrotum, which swelled as large as a child's head. In one case the throat was also affected. All presented the symptoms of general diphtheritic intoxication, and recovered with antitoxin and local measures, but extensive plastic operations were necessary to replace the destroyed tissues.—*Dermat. Ztschrft*, May.

Multiple Neurotic Gangrene of the Skin.—An interesting case is described by Dehio, in which any slight fright, the falling of a heavy book, the spilling of a bottle of wine on the tablecloth, or anything of the kind, was at once followed by the development of a patch of gangrene on some part of the body, hand, foot, arm, cheek, which healed in a month, more or less, leaving a deep scar; patient a well-to-do young woman, otherwise healthy.—*St. Petersb. Med. Woch.*, June 11.

A Clamp to Draw Down the Rectum in extirpations, that closes the lumen at the same time was presented at the German Congress of Surgery. Between the semicircular jaws a bullet-stopper moves up and down on a slide. This is inserted in the rectum and screwed firm, the jaws clamping together around it. The stopper can be slipped out at any moment without opening the clamp. It is illustrated in the *Cbl. f. Chir.* of July 2.

Rovsing's Study of the Infections of the Urinary Passages runs through the *Ann. des Mal. Genito-Urin.* from September to March. He does not endorse the generally accepted theory which ascribes to the bacillus coli the principal rôle in these infections, but announces the existence of a non-suppurating catarrhal affection caused by non-pyogenic, urine-decomposing microbes. Any pyogenic microbe may induce cystitis, whether inoculated in some lesion of the mucosa or arriving by metastasis, but in most cases it is due to pyogenic, urine-decom-pos-

ing microbes, the study of which may result in a practical sero-therapy. The bacillus coli is the most frequently encountered micro-organism in these passages, usually in the mild form of bacteriuria or, when there is lithiasis, in a slight suppurating pyelitis. In a few cases it may induce cystitis and nephritis. He even considers it possible that the antagonism between the bacillus coli and other microbes may transform malignant into benign infections. His work is based on 125 observations.

Lack of Sensibility in the Female Urogenital Organs is important from a medico-legal point of view as it renders the assertions of women in regard to therapeutic or criminal manipulations unreliable. The sense of touch and localization is very defective. Calmann reports that he packed the vagina of some patients with cotton, or with shot wrapped in cotton, to a weight of 100 grams, without any knowledge on the part of the subjects of the nature of the substances inserted. The urethra and cavum uteri are sensitive to pain, the remaining parts much less so.—*Berl. klin. Woch.*, No. 15.

Ephemeral Pneumonia.—Molteni has observed a number of cases in an epidemic of croupous pneumonia, and describes two at length in the *Gaz. d. Osp. e d. Clin.* of June 5. They commenced with a sudden severe chill lasting half an hour, with unconsciousness; temperature rose to 40.5 degrees C., respiration 44 and pulse 130, but the disease passed through all its phases, including aphasia, pulmonary edema and slight paralysis, to the crisis and commencing convalescence within twenty-four hours. The streptococcus was found with Fraenkel's diplococcus in the sputa.

Local Anesthesia is supplanting general to such an extent that the number of operations in which chloroform was used at Mikulicz's clinic has fallen from 815 to 324 during the past year. Manz reduces the pain from the ligature in Oberst's "regional cocain anesthesia" (*vide* JOURNAL, xxx, 496, 736 and 1236), by tying a second ligature close to the first when it becomes painful and removing the latter, repeating as often as necessary. He has used this method satisfactorily for severe operations on the lower arm, but prefers a 0.5 per cent. solution. Mankiewicz advocates simultaneous injection of morphin, as so much of the injected fluid escapes through the incision.

Tetanus Toxin Increases the Pressure.—The increase is not proportional to the dose of toxin but is closely connected with the contractions of the muscles, as is evidenced by the fact that curare arrests it. This effect of tetanus toxin is also connected in some way with the bulbar vasomotor center, as section of the medulla in the neighborhood of the cervical enlargement likewise arrests it. The frequency of the pulse is increased, and also the excursion of the vessel. The respiration is rendered systematically slower, while the expirated carbonic acid increases in progressively regular amounts. *Munich Med. Woch.*, June 7; from *Morgagni.*

Derivation of the Tetanus Bacillus.—Molinari asserts after extensive research that the tetanus germs exist normally in the soil as assumed, but are found only in the superficial layers. Oxygen and sunlight attenuate their virulence, but this is enhanced by passage through the intestines of animals (not man), which seem to be their chosen home and developing place. The pathogenic germs are therefore derived from the dung of animals, consequently are most frequent in gardens, on the street, in barns, etc., wherever animal fecal dust can penetrate, including that from rabbits, poultry, cats, etc.—*Munich Med. Woch.*, June 7.

Physicians of Olden Times.—It is said that a statute of Henry VII of England ordains that the healing art shall be limited to those persons who are profound, sad, and discreet, grandly learned and deeply studied in physic. Upon the whole, this seems a formidable curriculum even for a medical student of the present day to face. The lecturers on "profundity," we presume, would have about as much chance of imparting knowledge to their class as the lecturers on botany have in the present century. As for the lecturer on "sadness," there would certainly be a difficulty in filling the post. Without awaking further inquiries into the adaptability of Henry VII's curriculum for the medical students of his time, we feel certain that our own is generally calculated to be in the end more useful to the community.

Bertillonage to Receive Tardy Recognition in Germany.—The Germans have been slower than others in adopting Bertillonage, as it is called, the system of personal recognition by a series of measurements and the notation and registration of any natural pigmentary or hairy peculiarities. While the system is in use in France and very generally in Belgium, Switzerland, Russia and Italy, only isolated cities in Germany have adopted it. Some recent work with it at the prison at Moabit, in Berlin, has been encouraging, and now it is announced that the police departments of most of the south German towns are about to adopt it, Munich, Nurnberg, Regensburg, Augsburg and Wurzburg having already made the necessary arrangements for its introduction.—*Phila. Medical Journal.*

Hematomyelia from Gunshot Wounds of the Spine.—Cushing (*American Journal of Medical Sciences*, June), reports cases in which the missile lodged in the centrum of a vertebra without direct injury to the chord, but producing symptoms of hemilesion; both cases illustrate unusual features of a type of the Brown-Sequard paralysis, the value of the X-ray in locating the missile without operative interference, etc. There was a degeneration of the pyramidal tract, leaving paralysis in the lower extremities, and in one case involvement of ventral horn ganglia of the cervical enlargement has resulted in trophic changes with atrophy of some muscles. He concludes that paralytic symptoms which follow injuries to the cervical region are generally due to hemorrhage in the substance of the cords and that this hemorrhage is a predilection to a site in the lower part of the cervical enlargement. The hemorrhage, as a rule, occurs primarily on one side and leads to the Brown-Sequard type of paralysis. Hemorrhage also leads to cyst formations in many cases, producing symptoms quite like those of syringomyelia. Prognosis is good when uncomplicated by sepsis.

Master not Obliged to Furnish Medical Attendance.—There are authorities, such as decisions in Illinois and Indiana, holding that where there is an extreme emergency, and an injury has been received by an employe of a corporation, it is within the authority of an agent of the employer, highest in authority at the time and place where the injury occurred, to bind the company by a contract to pay a physician for services rendered to the injured servant. But the supreme court of Colorado says that it is cited to no case and finds none, where it is held to be the duty of an employer in the absence of contract, to furnish medical service and to send to a hospital a servant injured while in the service. If by analogy to the cases just referred to, it can be said that such a duty ever exists independent of contract, which it reiterates is not the law, the court goes on to say it is only in a case of great emergency, and where it is imperative to save life or prevent great harm. The mere fact that an injury was inflicted requiring medical or surgical treatment, or that the locality where it was received was remote from the place where such treatment was accessible, the court declares in Denver & Rio Grande Railroad Company vs. Iles, March 21, 1898, does not make it negligence on the part of the employer if the latter declines a request from the injured servant to be permitted to seek treatment, or does not obtain for the servant, or aid him in obtaining the same. The general rule deduced is that in the absence of contract, a master is not obliged to furnish medical attendance to a servant who is injured in the performance of his duty.

The Physician of Napoleon Bonaparte.—"Few students of Napoleonic history," says the *London Chronicle*, "are aware that Dr. Antommarchi, who attended upon Napoleon I during his last illness at St. Helena, is buried in the cemetery at Santiago de Cuba. He had a brother living in that island, and after the Emperor's death proceeded thither and lived at Santiago, exercising his skill as an oculist gratuitously among the poor. After his death in 1825 a public monument was erected to his memory in the local cemetery." This Francesco Antommarchi, like Napoleon, a Corsican, according to "Chambers' Encyclopædia," did not publish "Les Derniers Moments de Napoleon" until 1826. He emigrated to America about 1836 and died at San Antonia in Cuba, April 3, 1838. He seemed possessed of a disputatious turn of mind and the last quoted authority somewhat sarcastically hints that his celebrity was based entirely upon his intimacy with the great emperor during exile, at whose death he became a beneficiary to the extent of about 100,000 francs.

Professorship Not in Nature of an Office.—People vs. New York Post-Graduate Medical School and Hospital is the title of a case in which application was made for a writ of mandamus, based upon the notion that the position of a professor in the defendant college is in the nature of an office, and that it is in the province of a mandamus to reinduct a person into that office and keep him there. But the first appellate division of the supreme court of New York pronounces this, May 6, 1898, an erroneous view, both of the professor's true position and of the office of the writ. It says that the college is a private corporation, and its professors and instructors are simply professional men appointed to serve the institution in a particular manner. They either hold contract or honorary relations with the college; but which was not clearly disclosed in this case. If the former, the court says, a professor wrongfully removed can sue for his salary, or for any other emolument to which he is entitled. If, however, the relation is honorary, its continuance or discontinuance must be mutually optional.

Tinea Tonsurans.—Sheffield, in the *New York Medical Journal* of May 14, presents a method by which he claims severe cases of ring-worm of the scalp can be cured within three to six weeks. He clips the hair close to the scalp and applies once a day for five successive days over the entire scalp, but more thickly over the affected spots, the following ointment:

℞	Acidi carbol. / Olei petrolei. \	āā	65.0
	Tinct. iodini. / Olei ricini. \	āā	110.0
	Olei rusci (German), q. s. ad.		500.0

On the sixth day he wipes this off with a rag dipped in olive oil, again clips the hair, washes the scalp thoroughly but gently with green soap and a soft nail brush. The next day he applies the mixture as thickly as before, and repeats the whole process regularly for three or four successive weeks, depending on the severity of the case, when it is found that new hair begins to grow and no trichophyton fungi can be found in the hair microscopically. For a few days he then applies a 10 per cent. sulphur ointment and then for about two weeks as follows:

℞	Resorcini / Acidi salicyl. \	āā	16.0
	Alcoholis		120.0
	Olei ricini, q. s. ad.		500.0

Splenectomy.—Vanverts concludes, from a study of 279 cases, including thirteen never before published, that the removal of the spleen is never in itself fatal. The circulation is not materially affected when a sound spleen is removed, but very much enlarged organs which sometimes contain as much as liters of blood, naturally affect the circulation more. He notes the fact that after ligature of the splenic vessels there is occasionally a sudden violent hemorrhage through the vessels of the wound. After removal of the spleen the red corpuscles and hemoglobin decrease and the white corpuscles increase in number, but these alterations are of varying intensity and duration, from a few days to months. The mortality in 242 cases was 102, or 41.7 per cent.; splenectomy on account of injuries, 18 with 10 deaths; abscess, 4 with 1 death; cysts, 18 with 3 deaths; hypertrophy from leukemia, 29 with 26 deaths; from malaria, 79 with 23 deaths; from other causes, 94 with 38 deaths. Vanverts' thesis is a comprehensive and valuable review of the subject, according to the *Cbl. f. Chir.* of June 11. Henricius describes in the same issue a fibrosarcoma that weighed 3500 grams, starting in the capsule of the spleen, the first of the kind on record. Splenectomy was not performed. The tumor recurred even after a second extirpation, terminating fatally.

Treatment of Leprosy in the Fiji Islands.—Prof. L. Lewin has been investigating the peculiar properties of the tree with which the Fiji islanders cure leprosy, according to the accounts of the missionaries. He recommends further research in regard to what may prove a valuable acquisition to our therapeutics, administered in a less barbarous fashion. The person affected with leprosy is placed in a small hut and rubbed down with the fresh leaves of the *excoecaria agallocha*, or poison milk tree. His body is then covered with the leaves, his hands and feet tied and he is dragged to a small fire made of boughs of the tree, his head in the midst of the heavy black smoke, about fifteen inches from the floor. The friends then retire and close the door, unmoved by the cries and appeals of the victim, who is left in this smudge for several hours, when he is removed and the skin scraped, and scratched in various places deep enough to draw blood, when he is left to rest. Some die, but those that survive are cured of the leprosy. The essential points are the heat, the long-continued action of the milky sap and its melted products, and possibly the scarifications. The tree is known throughout the Pacific as very poisonous, causing blindness if any of the sap gets into the eyes. One or two drops will purge like croton oil (*Deutsche Med. Woch.*, May 26). The *Cronica Méd. de Filipinas* mentions that the natives dip strands of cotton in the sap and dry them, soaking a strand in a glass of water, which they drink when a powerful purge is desired.

Medical Examination of Plaintiff as New Question in Kentucky.—The question whether a plaintiff in an action for damages for permanent injuries to his person may be required to submit to medical examination has, as readers of the JOURNAL know, received considerable attention in some of the states. But the court of appeals of Kentucky says, in Belt Electric Line Company vs. Allen, Jan. 11, 1898, that it does not appear to have heretofore arisen in that state. And while the decisions are not entirely uniform on the subject, it thinks that the weight of authority, which it seems disposed to follow, is that such physical examination may be demanded in cases where discovery of the truth will more likely result with, than without the examination, and the ends of justice be thereby better subserved. The conclusions which the various courts and some of the text writers have reached, it takes pains to summarize as these: 1, that trial courts have the power to order surgical examination by experts of the person of a plaintiff who is seeking to recover for personal injury; 2, that the defendant has no absolute right to have an order made to that end, but that a motion therefor is addressed to the sound discretion of the court; 3, that the exercise of that discretion will be reviewed on appeal and corrected in case of abuse; 4, that the examination should be ordered and had under the direction and control of the court, whenever it fairly appears that the ends of justice require the disclosure or more certain ascertainment of facts which can only be brought to light or

...lly elucidated by such an examination, and that the examination may be made without danger to the plaintiff's life or health, and without the infliction of serious pain; 5, that the refusal of a motion, when the circumstances present a reasonably clear case for examination under the rules stated, is such an abuse of the discretion lodged in the trial court as will demand a reversal of a judgment in the plaintiff's favor.

The Question of Non-bacterial Immunity has been neglected, and yet possibly the solution of many problems may be bound up in it. Why are frogs unaffected by snake poison? why is digitalis harmless for rabbits; atropin and cicuta for goats? As a contribution to the question Prof. A. Horvath of Kasan has been investigating, and confirms the peculiar immunity of the hedgehog to cantharides. He publishes a number of tests in which freshly captured hedgehogs were fed with the fresh cantharides, which were greedily eaten without the slightest disturbance except a slight, transient loss of weight, possibly to be ascribed to the confinement. Sometimes as much as 120 flies or 30 grams were taken at a time, and the animals disposed of enough cantharides during the tests to have exterminated a regiment of soldiers, without being injuriously affected in any way. The flies were found in the dejecta in minute fragments (*Deutsche Med. Woch.*, June 26). This peculiar immunity is confirmed by Professor Lewin, who also states that the animal resists the action of opium, hydrocyanic acid and alcohol very much longer than others before showing the effects of intoxication. But it succumbs to large amounts of cantharidin administered subcutaneously or per os, and cantharidin produces an inflammatory reaction in the skin, as in other animals. He also states that neither the blood nor the serum of cantharidinized hedgehogs protects other animals against the poison, which recalls the relative immunity of birds to strychnin, and the impossibility of transferring this immunity by injecting other animals with their serum. He considers it probable that the hedgehog's tissues merely possess a higher coefficient of resisting power than others.

Against Experimenting with Instruments.—The supreme court of Wisconsin has heretofore held that, in an action for personal injuries, the court may, in a proper case, at the trial, direct the plaintiff to submit to a personal examination by physicians in behalf of the defendant. But it holds, in the case of O'Brien vs. the city of LaCrosse, May 3, 1898, that it was not only not an abuse of discretion to refuse, but would have been an abuse of discretion to force the plaintiff to submit to an experiment with instruments under the circumstances. This was an action brought to recover damages for a personal injury sustained by reason of a plank in an alleged defective sidewalk flying up and striking the plaintiff across the abdomen, and throwing her down and permanently injuring her bladder, or muscles connected with her bladder. After submitting to one examination, by the defendant's physicians, which was full and complete, except that the plaintiff, under the advice of her physicians, refused to permit the introduction of a catheter into her bladder, for the reason that it would endanger her health, it was insisted that the court should compel her to submit to a further examination by physicians on the part of the defendant, to ascertain the exact nature of her injuries, and how long they had existed, which the trial court refused to do, and the supreme court upholds it in not doing, as above stated. The supreme court says it seems that courts differ widely as to the absolute right to a personal examination, in the absence of statute, by physicians or experts of the opposite party. Some courts deny the right altogether. Some hold that an absolute right to such examination exists at common law. Such differences of opinion, it suggests, may be accounted for in part by the difference in the circumstances under which such examinations were requested. The better opinion, it thinks, makes the right, in the absence of statute, to rest in the sound discretion of the trial court.

Yellow Journalism Rebuked.—The following letter concerning the prurient proneness to criticise the Medical Department of the Army without due regard to the facts, is self-explanatory. This JOURNAL has been fair in the matter. Its columns have been open, but it has excluded much carping criticism, but Wm. Wood and Company's medical journal has lost no opportunity to hamper the Medical Department of the Army, and cripple its usefulness by publishing "yellow" articles, while the gallant medical corps are fighting the enemy in the field. This is another unfortunate exhibition of that sort of "enterprise" which has made this publisher's organ such a notorious example of all that is worst in medical journalism. It is peculiarly fitting that in the same article to which exception is taken by the Surgeon-General, a fulsome compliment is handed a sanitary officer, whose official course has been repudiated by the principal sanitary organizations of this country.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D. C., Aug. 1, 1898.

To the Editor of the Medical Record, New York, N. Y.:—Sir—It is a matter of great surprise to me that a leading medical journal should condemn the Medical Department of the Army, without a hearing, upon the reports of newspaper correspondents. I regret that the pressure of official duties makes it impossible for me at present to make a full reply to these strictures. I will, however, take time to state a few facts.

The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is one hundred and ninety-two (192). There are at present thirteen (13) vacancies. The administration of the Surgeon-General's Office and Army Medical Museum requires six (6). Eleven (11) are on duty at medical supply depots and as chief surgeons of military departments. One (1) is at the Soldiers' Home; fifty-six (56) at general hospitals, on hospital ships and at garrisoned posts. Four (4) have been disabled during the war by sickness. Five (5) are on duty as chief surgeons of army corps. This leaves ninety-six (96) medical officers available for duty with the troops in the field. Of these, thirty-five have been appointed brigade surgeons of volunteers and are distributed among the various army corps.

This deficiency in regular medical officers has made it necessary to employ nearly three hundred contract surgeons, and more are being employed every day. Most of these doctors from civil life are doing good service and many of them are thoroughly well equipped physicians and surgeons with ample hospital experience; but it has been impossible to make a careful selection owing to the great pressure of business in the Surgeon-General's Office, and the urgency has been so great that it has not been practicable to have Examining Boards to pass upon their qualifications.

General Shafter's Army at Tampa was thoroughly well supplied with the necessary medicines, dressings, etc., for field service, but owing to insufficient transportation he left behind at Tampa his reserve medical supplies and Ambulance Corps. Every one who has read the papers knows about the difficulties encountered in landing supplies at Siboney. As is usual under such circumstances, the fighting men with their guns and the rations necessary for their subsistence were first landed and hurried to the front. The *Relief*, loaded to her utmost capacity with medical supplies, arrived at Siboney four days after the fight at El Caney. That she was not able to get there sooner was a great disappointment to me, but was no fault of the Medical Department. I asked for a hospital ship in good time but there was unavoidable delay in securing a suitable vessel and in preparing her for service.

It has not been the expectation of the Medical Department that every wounded man would immediately receive the attention of a surgeon. No modern army makes provision for so large a number of medical officers as this would require. But attached to our Army there is a Corps of noncombatants known as the Hospital Corps, which is the organized and authorized Red Cross Corps of the Army. At the outbreak of the war we had 800 Hospital Corps men in service. At present there are more than 4000. These men wear a brassard upon the left arm bearing the Red Cross of the Geneva Convention. We have done our best to instruct them in giving first aid to the wounded, and in a majority of cases a first aid dressing properly applied by one of these men is all that is required. All of the surgeons who have come from the front have testified to the remarkable results attained from the prompt application of aseptic dressings by our Hospital Corps men and by the soldiers themselves or their comrades. The proper application of the dressings contained in the first aid packet, which is carried by every

soldier, is, under existing regulations, a matter in which every enlisted man has special instruction. For some time past this instruction has been given first by our medical officers to the company officers, and by them to the enlisted men.

My position with reference to the inadvisability of sending female nurses to our camps of instruction, or with our armies in the field, has given great offense to some members of the Red Cross Society, and it is evident that the unjust attacks made upon me and upon the Medical Department of the Army result largely from the stand I have taken in this matter. I have gladly accepted the assistance offered us in the way of delicacies for the sick, etc., and we have now a large number of trained female nurses on duty at our general hospitals, where they are giving great satisfaction, but I see no reason to change my views with reference to the sending of female nurses with our troops in the field. They are an incumbrance to an army mobilized for active operations. This objection does not apply to the sending of immune female nurses for service in our yellow fever hospitals near Santiago, and I have already sent nearly one hundred.

The first aid dressing is to be put on at or near the firing line, and the men have usually to be transported to the field hospitals on litters. In this age of aseptic and conservative surgery comparatively little operating is required, and our regular force is ample to attend to this. Moreover, we have men selected for their experience and skill to decide whether operations are necessary and to perform them. I have never objected to the surgeons and ambulances of the Red Cross Society going to the field for the purpose of rendering any necessary assistance, but, in my opinion, they should be independent as regards transportation and should not call upon the Government for assistance in getting to the field of operations. The editor of the *Medical Record* knows that when he, in company with other prominent gentlemen from New York, called upon me in my office to offer the assistance of this organization, I said that an emergency might arise in which such assistance would be most welcome, and suggested the despatch of a hospital ship to the seat of active operations. If there has been any failure to get necessary supplies to Cuba it has been because of the difficulty of securing adequate transportation and of landing supplies through the surf; but we have been constantly importuned to transport Red Cross agents and female nurses to the front. I am informed that many of these so-called nurses had never received any special training to fit them for the duties they were so eager to undertake. The National Red Cross Society should have been entirely independent of Government transportation if it expected to fulfil its proper function of affording aid to the wounded of both armies, in accordance with the terms of the Geneva Convention.

As regards the *Seneca*, I am informed by Major Torney, in charge of the Hospital Ship *Relief*, that he transferred forty-two (42) wounded men, most of whom were entirely able to take care of themselves, from the *Relief* to the *Seneca*, because at that time it was expected that our troops would storm Santiago, and that a large number of wounded would be sent to the Hospital Ship for treatment. For the same reason a certain number of convalescents were sent from the shore hospital. Two acting assistant surgeons were sent on board with a supply of the most necessary medicines and dressings. If the ship was overcrowded or inadequately supplied with water, knives and forks, etc., the Medical Department is in no way responsible.

Finally, I would say that when the medical officers now at the front return home, I expect to have full information with reference to the efficiency of the medical service in the vicinity of Santiago, and in the meantime I hope that the profession at large will not be so ready to draw inferences unfavorable to the Medical Department of the Army on the basis of reports published in the daily papers, as the editor of the *Medical Record* has been. Very respectfully,

(Signed) GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

A Heavy Rise.—The *Medical Record* says it has every belief that "Surgeon-General" W——n "will rise to his opportunities." No reason is given for this wild flight of imagination on the part of the *Record*, and the general judgment of the American Public Health Association, the AMERICAN MEDICAL ASSOCIATION, the Kentucky State Board of Health, as expressed in recent resolutions, is to the effect that a very considerable adipose dead weight will have to be removed before this picturesque person can either "rise" very high or fly very far. However, we shall watch this highly diverting and fugacious performance on the part of the *Record's* heavy-weight with interest.

Hysteric Blackmail.—What was aptly described as "one of the perils of medical life," by the presiding magistrate at a London police court, is an illustration of the difficulties which sometimes beset the medical practitioner in the discharge of his duties. Mr. A., a surgeon, was brought to the court on a warrant, charged with committing a criminal assault on a Mrs. B. The solicitor who had been instructed to prosecute said that since the case had been put into his hands he had examined the witnesses for the prosecution and, in his judgment, the evidence did not support the charge. The statement of prosecutrix was not corroborated in important points. Mr. Jones, to whom Mr. A. acted as assistant, was called and also stated that he found the prosecutrix suffering from hysteria and that Mr. A. had only done what was quite right in enforcing the administration of a soothing draught. The judge decided that Mr. A. was entirely and completely exonerated, stating that such cases frequently occurred, and expressing sympathy with any gentleman subjected to such a charge as this. A favorable ending to an unfounded charge of so serious a nature hardly compensates for the perils the medical man is exposed to in dealing with a certain class of patients, but it affords an example of the annoyance and risks which constitute one of "the dangers of medical life."

Surgical Experiences in the Late Frontier War of Northern India.—The *Indian Medical Record* gives the following interesting conclusions regarding the last important conflict in which the English have been engaged: "The surgical emergencies of the struggle were immense, and the demands on the operative skill of the Army Medical Staff were equally so. Capital operations of the severest type have been performed by the hundred on the battle-field and in the movable camps, and so perfect has been the equipment, and so harmoniously have the medical units fitted into every emergency, that there has not been a single hitch during the whole campaign. The sick and wounded have been attended to admirably, and the results of the surgical work on the field have been brilliantly successful. Every case of amputation of limbs has proved a success. Not a single septic difficulty has been found in the whole history of the campaign. These facts speak volumes to the credit of our medical staff and to their hard-working local staff, the Military Assistant Surgeons. We understand that the great French military medical expert, who was deputed to observe and to criticise the working of the British system of military medical equipment in India, and who has seen the whole scheme in active order on the frontier, has pronounced the most favorable opinions on our army medical organization. It is, he says, infinitely superior to anything else in the world. The opinion has been fully endorsed by a Japanese expert also. Unquestionably, the Army Medical Staff has fully vindicated its professional honor in such a manner as to silence the hostile and envious criticisms of the authorities at the War Office, who so grudgingly concede the pressing reforms of which this excellent service stands so much in need."

Caisson Disease at the Gouverneur Hospital, New York City.—The first symptoms of that disease resemble those of apoplexy. In one case a man came into the hospital with every symptom of having had an apoplectic stroke. He was unconscious, the pupil of his eyes were unequally distended, his respiration was stertorous. He remained unconscious for fifteen minutes and then recovered only partially. When he did recover there was anesthesia extending all through the lower half of his body. This is a symptom usually betokening spinal trouble. For short periods he became utterly unconscious. During the time he was conscious he seemed to be perfectly rational. I questioned him and found that he remembered nothing whatever that had happened since he had been attacked by the dis-

half an hour after he left the caisson. After he died we an autopsy, and about the only thing we gained from it that there had been a hemorrhage into the heart muscles. cases vary in their symptomatology. In one case a patient's t arm became absolutely rigid in such a position that the d was bent back near the chin. Meantime his left arm was king in spasmodic convulsions that could not be controlled. common symptom is that of intense pain at the ears. atment here is to administer stimulants and to induce per- ation as copiously as may be. In most cases this works well. On the Brooklyn side, where similar work is being e, the workmen undertake to treat one another by plung- the affected man into a hot bath. It is their ignorant way applying the same remedy that we do here; but the depres- effect of a hot bath is a danger for the men in the state in ich victims of caisson disease are usually found to be when y are picked up. The theory of the disease is that the air- ssure in the caisson prevents the system from throwing off injurious gases of the body, particularly the nitrogenous mpound. The pressure prevents the various organs of the ly from discharging their functions toward one another, and gestion, with the symptoms of paralysis, results. Engineer shington A. Roebling was obliged to give up his work on Brooklyn Bridge for a long time, because of an attack of isson disease and that his life was endangered by it. Three ndred or more men are employed from time to time in the issons at the foot of Delancy Street, and they have been enty-five or thirty applications for treatment at the hospital ce the work began.

Part of Physician's Account Outlawed.—A physician sued to cover for services rendered during a term of years, some of e items of his account being more than six years old, for ich reason it was contended that they were barred by the ew York statute of limitations. No one tried to make out that e account between the parties was a mutual, open, and cur- nt account, so that the earlier items would be carried along the later, as is true of some classes of accounts, but the phy- ian insisted that the account was continued by reason of rtain payments made on it. But, on that point, the fourth ppellate division of the supreme court of New York decides gainst him; Burdick vs. Hicks, May 7, 1898. When it was hown that the account had run for more than six years, the ourt says, the burden was upon the physician suing to show hat the case was accepted from the statutory bar, which he iled satisfactorily to do. The legal effect of a payment upon n account which has run for more than six years (the New ork limit) is that of a new promise to pay an old debt, and the romise revives the old debt. Yet such a promise should be ade with a clear and explicit understanding of the true con- ition of the account; and, where a creditor relies upon such payment to take an account out of the statute of limitations, t is incumbent upon him to show that the payment was made ith a clear understanding on the part of the debtor that there as a balance still remaining unpaid after such payment. The atal weakness of this case was that the evidence afforded no round for assuming any admission on the patient's part, or or inferring a new promise made by her to pay the balance of he debt; for the reason that there was nothing to show that, t any time when payments were made, she knew that there as a balance remaining unpaid, or that there still continued n obligation or debt in favor of the physician against her.

Avan Surgery.—Some interesting observations relating to the surgical treatment of wounds by birds were recently brought before a Genevan society by Professor Fabio. The author quotes the case of the snipe, which he had often observed engaged in repairing damages. With its beak and feathers it makes a very creditable dressing, applying plasters to the bleeding wounds, and even securing a broken limb by means of stout ligature. On one occasion he killed a snipe which had on its chest a large dressing composed of down, taken from other parts of the body and securely fixed to the wound by the coagulated blood. Twice he had brought home snipe with interwoven feathers strapped on to the side of fractures of one or other limb. The most interesting example was that of a snipe, both of whose legs he had unfortunately broken by a misdirected shot. He recovered the animal only on the following day, and he then found that the poor bird had contrived to apply dressings and a sort of splint to both limbs. In carrying out this operation some feathers had become entangled around the beak, and not being able to use its claws to get rid of them, it was almost dead from hunger when discovered. In a case recorded by M. Magner, a snipe which was observed to fly away with a broken leg, was subsequently found to have forced the fragments into a parallel position, the upper fragments reaching to the knee, and secured them there by means of a strong band of feathers and moss intermingled. The observers were particularly struck by the application of a ligature of a kind of flat-leaved grass wound round the limb, of a spiral form, and fixed by means of a sort of glue.

Louisville.

Osteopathy.—A suit has just been filed against the State Board of Health, by Harry Nelson, a graduate of the "American School of Osteopathy of Kirksville, Mo.," asking that its members be restrained from pursuing him criminally, or seting on foot any criminal proceedings against him, or in any other manner interfering with or molesting him in his profession. He also asks for a writ of mandamus compelling the State Board of Health to recognize and endorse the American College of Osteopathy "to the end that his diploma therefrom may entitle him to a certificate to practice his profession." The decision will be watched for with great interest, as it is the final card played by this "school" to gain recognition at the hands of the State Board of Health. At the last session of the Legislature it was decided that the osteopaths must pass an examination before they be granted a certificate, and as just recorded in these columns only one woman presented herself upon call of the Secretary of the Board to pass the examination. The plaintiff in this case states that the school and the system in which he practices is a perfected one, and has the recognition of law in a number of States. He understands that the State Board is preparing to prosecute him under and by authority of the act on "Empiricism," which act he alleges is in violation of the bill of rights.

Fines.—The following physicians were fined in the ordinance court, $10 each, for not having paid their physician's license: Drs. M. Thum, F. F. Berry and Miles Willett.

Louisville Medical College.—The announcement of the reorganization of this college has just been made, as follows: Dr. C. W. Kelly, Dean and Professor of Anatomy and Clinical Medicine; Dr. Geo. M. Warner, Secretary and Professor of Materia Medica and Diseases of Children; Dr. H. B. Ritter, Professor of Obstetrics and Hygiene; Dr. A. M. Cartledge, Professor of Gynecology and Abdominal Surgery; Dr. William Cheatham, Professor of Ophthalmology, Otology and Laryngology; Dr. Jno. G. Cecil, Professor of Theory and Practice of Medicine and Nervous Diseases; Dr. W. C. Dugan, Professor of Surgery and Clinical Surgery; Dr. Adoph Pfingst, Professor of Physiology and Histology; Dr. Harris Kelly, Professor of Chemistry and Toxicology; Dr. Fouche Samuels, Professor of Practice of Surgery and Operative Surgery.

Health Officers' Report.—There were 56 deaths for the past week, with 48 the corresponding week of last year. Thirty-five of these were white and 21 colored.

Philadelphia.

Prof. John Guitéras will Remain in Cuba for the Present.—A false rumor to the effect that Dr. Guitéras was soon to return to Philadelphia has been set at rest by the statement

recently made by Senor Dominguez, who is at present making his home at Dr. Guitéras' residence in Philadelphia. Senor Dominguez said that the report had been denied by Surgeon-General Sternberg and by Dr. Guitéras. In a private letter received recently he reported the outbreak of yellow fever among the United States troops, but stated that the epidemic was very mild and that the troops of our country would not suffer much. It is well known that as a diagnostician in cases of yellow fever Dr. Guitéras has no superior, but as to executive work he has little taste or inclination for it.

NO YELLOW FEVER FOUND.—On July 20, Governor Hastings had a conference with Dr. Benjamin Lee, city health officer of Philadelphia and secretary of the State Board of Health, relative to precautionary measures in preventing the invasion of yellow fever into the State of Pennsylvania and especially through the port of Philadelphia. It is known that boats from Cuba frequently land here, and the regions around the wharves would be fertile soil for the development of this scourge. The health authorities have therefore been up and doing, and a house-to-house inspection has been or will be made. The work was divided into two sections, Medical Inspector Taylor with fifteen assistants looking after all the houses south of Market and east of Third, while Nuisance Inspector Kennedy and twenty assistants will attend to the section north of Market Street. Dr. J. Howard Taylor recently said: "We have determined to institute this investigation in order to prevent the disease getting into this city. We do not expect it here, and the precaution is taken simply as the result of many years of experience in the regulation of health matters. If a disease, no matter how easy it may be to control, gets the start of the authorities, it will reach such proportions that the ultimate result can not be conceived of; but if it is broken at the start we can so regulate it that it will not get beyond control. That is the intention with regard to yellow fever. I want to say most emphatically that we do not anticipate an outbreak, we do not even expect one case, but we will have this inspection and observe every precaution in order to insure immunity from the disease. How we are to guard against fever victims coming in by train is difficult to determine, and if the disease does get into the city it will in all probability be by means of railroads." It is stated that should a contagious disease be found the house will be quarantined, thoroughly disinfected, and the patient sent immediately to the municipal hospital.

MORTALITY STATISTICS.—For the week ending July 23, there have been reported to the Bureau of Health 523 deaths, an increase of 30 over last week and of 48 over the same period of last year; 214 deaths were in children under five years of age. The following were some of the causes: Bright's disease, 8; cholera infantum, 86; cholera morbus, 7; tuberculosis, 46; inanition, 11; marasmus, 21; sunstroke, 10; teething, 2; uremia, 7; heart disease, 3; appendicitis, 3; peritonitis, 6; cancer, 14; dysentery, 4.

INFECTIOUS DISEASES.—This week: Diphtheria, 16 deaths and 46 cases; scarlet fever, 1 death and 25 cases; typhoid fever, 6 deaths and 70 cases. Last week: Diphtheria, 14 deaths, 73 cases; scarlet fever, 27 cases; typhoid fever, 5 deaths, 50 cases.

RED CROSS AMBULANCE.—Some time ago the Red Cross Society of this city appealed to the charitably disposed for funds necessary for an ambulance and equipments for the soldiers in Cuba. The ladies of the North Broad Street Presbyterian Church became interested in the work and quickly raised the necessary amount ($275) besides a full set of harness. Dr. De Forrest Willard was appointed by the Red Cross to receive the ambulance on July 26.

A CASE OF MEDICO-LEGAL INTEREST.—On July 4, Coligney Scheer, a lad 14 years of age, living at 2404 North Sixth Street, received a wound from the accidental discharge of a pistol. A few days later lockjaw set in, from the effects of which the patient died. At the inquest it was learned that on June 19 the patient accidentally had a nail thrust into his foot, and the facts not being plain to the coroner as to w'ich wound gave rise to tetanus, the case has been submitted to physicians for a correct decision.

CASES OF BERIBERI.—A few days ago seven foreign sailors with beriberi arrived from Probolingo, one of the Bermuda Isles, on the German bark *Steinbeck*. All the patients were taken to the German Hospital, where at last accounts they were doing well.

CHANGE OF ADDRESS.

Austin J. H., from 912 Walnut Street to Commerce Building, Kansas City, Mo.
Bartholomew, H. B., from 1468 S. Pearl Street to 104 Broadway, Denver, Colo.
Blake, J. D., from 602 S. Paca Street to 1014 W. LaFayette Avenue, Baltimore, Md.
Bell, S. H., from Jackson Bldg. to Ferguson Bldg., Denver, Colo.
Babcock, H. L., from Findlay to 660 Stocking Avenue, Toledo, Ohio.
Fenelon, M. P., from Chicago, Ill., to Ripon, Wis.
Getzlaff, from St. Peter, Ill., to Grand Haven, Mich.
Hodson, F. A., from Denver to Florence, Colo.
Kindig, F. M., from 2139 Wabash Avenue to 100 E. Twenty-second Street, Chicago, Ill.
Klasen, J. P., from 1462 Wabash to 1415 Michigan, Chicago, Ill.
McElfresh, C. H., from 1417 Bremen Avenue to 4337 N. Broadway, St. Louis, Mo.
McAllister, A. M., from 2045 Chestnut to 3626 Hamilton, Philadelphia, Pa.
McKleveen, F. G., from 219 S. Grant Avenue to 103 Byers Street, Denver, Colo.
Niblack, E. S., from 72 Lafayette Avenue to corner 7th and Elm, Terre Haute, Ind.
Palmer, G. T., from Alton to Poplar Grove, Ill.
Palmer, T. D., from 1705 Lawrence Street to Steele Block, Denver, Colo.
Page, J. F., from New York, N. Y., to Paxton, Ill.
Post, M. H., from St. Louis, Mo., to The Moorlands Hotel, Gloucester, Mass.
Perkins, D. S., from Cleveland, Ohio, to Chase, Colo.
Prather, D. J., from Oakland to Sacramento, Cal.
Porter, I. W., from Mobile, Ala., to Atlanta, Ga. Box 100.
Peavey, J. L., from 314 McPhee to 1253 Sherman Avenue, Denver, Colo.
Rogers, O. L., from Milledgeville to Sandersville, Ga.
Rimkel, A. E. from Jefferson to Chambers and Hopkins Streets, Milwaukee, Wis.
Rogers, B. W., from Oakland, Cal., to 55 33d Street, Chicago, Ill.
Robertson, J. J., from Little Rock to Wynne, Ark.
Sampson, J. H., from 6th and Felix to Corby Bldg., St. Joseph, Mo.
Snitcher, H. C., from 801 14th Street to 907 17th Street, Denver, Colo.
Tombaugh, L. H., from Three Rivers, Mich., to Sheridan, Ind.
Tyler, J. A., from 423 E. Long Street to 268 N. Champion Avenue, Columbus, Ohio.
Van Slyke, W. H., from Calument to Opechee, Mich.
Willey, W. B., from Davenport to Bennett, Iowa.
Wood, E. M., from Steele Block to Box 644, Denver, Colo.
York, F. A., from 709 28th Street to 1109 E. Alameda Avenue, Denver, Colo.

LETTERS RECEIVED.

American Therapeutic Co., New York, N. Y.; Alden, W., Roxbury, Mass.; Adams, C. B., Vanceburg, Ky.; Ashmun, G. C., Cleveland, Ohio.
Bausch & Lomb Optical Co., Rochester, N. Y.; Bond, R. I., Hartshorne, I. T.; Berteling, J. B., South Bend, Ind.; Bell, O. G., Norwich, N. Y.
Caldwell, J. J., Baltimore, Md.
Dewar, J. B., Cedar Springs, Mich.; Dagney, T. F., Philadelphia, Pa.; Dupont, R. S., Detroit, Mich.
Evans, D. W., Dell Rapids, S. D.; Eggert, X. C., Chicago, Ill.; Ernst, Mrs. C., Toledo, Ohio; Elliott, A. V., Beresford, S. D.; Edes, Robert T., Jamaica Plain, Mass.; Estep, T. L., Stratford, N. C.; Elliott, H. G., 2; New York, N. Y.; Etheridge, J. H., Chicago, Ill.
Finley, F. W., Red Ash, Ky.; Fordyce, W. E., Washington, Iowa; Fite, C. C., New York, N. Y.
Gibbert, J. B., Dallas, Texas; Gould, George M., Philadelphia, Pa.; Garey, J. H., Wilsey, Kas.
Hummel Adv. Agency, A. L., New York, N. Y.; Herrick, A. B., Santa Rosa, Cal.; Hoagland, George A., St. Louis, Mo.; Hodges, J. Allison, Richmond, Va.
Jackson Sanitarium, Dansville, N. Y.; Johnston, J. C., New York, N. Y.; Jordan, L. H., Mt. Jackson, Va.; Joslyn, Henry, Denver, Colo.
Kellogg, J. H., Battle Creek, Mich.; Keller, J. W., Hot Springs, Ark.; Kiefler, A. E., St. Louis, Mo.
Livingston, G. M., Kalamazoo, Mich.; Lucast, T., Milwaukee, Wis.; Levy, R., Denver, Colo.; Lehn & Fink, New York, N. Y.; Leffingwell, W. E., Watkins, N. Y.; Lange, Etta, Dayton, Ohio.
Martin, Franklin H., Chicago, Ill.; Matthews & Swartz, Pine Bluff, Ark.; Metz, A. L., New Orleans, La.; Marchand, Charles, New York, N. Y.; Massey, G. B., Philadelphia, Pa.; MacLennan, Donald, Tonga, Friendly Islands, Polynesia; Moore, C. R., Chicago, Ill.; Murphy, J. B., Chicago, Ill.; McKee, Mrs. N. A., Plymouth, Pa.; Mulford Company, H. K., Philadelphia, Pa.; Mooney, F. J., Old Forge, N. Y.
Parke, Davis & Co., Detroit, Mich.; Prince, David, New York, N. Y.; Perkins, D. S., Cleveland, Ohio; Parker, E. F., Charleston, S. C.; Paul Paquin Laboratories, St. Louis, Mo.
Rawlings, J. A., El Paso, Texas; Reed & Carnrick, New York, N. Y.
Schameker, J. A., Cleveland, Ohio; Smith, D. G., Freeburg, Pa.; Smith, H. S., Ortonville, Mich.; Stell, George S., Paris, Texas; Spalding, W. G., New York, N. Y.; Sprague, W. B., Eureka Springs, Ark.; Schneider, A. J., Indianapolis, Ind.; Smith, W. O., New Castle, Pa.; Senn, Col. N., New York, N. Y.
Townsend, W. R., New York, N. Y.; Tracy, J. L. Toledo, Ohio.
University of Illinois, Champaign, Ill., Unger, A. E., Dundee, Mich.
Wright, W. L., Brandon, Texas; Woody, Samuel E., (2) Louisville, Ky.; Wallace, W. B., Lima, Ind.; Willey, W. B., Bennett, Iowa; Wharton, J. E., Jacksonville, Ill.; Wilde, Julia Gabot, New York, N. Y.; Walter, W., Chicago, Ill.; Woldert, E. A., (2) Philadelphia, Pa.; Whelpley, H. M., St. Louis, Mo.